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GOVT PUBNS

ENVIRONMENTAL ASSESSMENT REVIEW PANEL

IN THE MATTER OF AN APPLICATION BY FOOTHILLS PIPE
LINES (YUKON) LTD. TO THE MINISTER OF INDIAN AFFAIRS
AND NORTHERN DEVELOPMENT FOR A GRANT OF THOSE
INTERESTS IN THOSE AREAS OF TERRITORIAL LANDS IN THE
YUKON TERRITORY AS MAY BE NECESSARY FOR THE CONSTRUC-
TION AND OPERATION OF THE SAID NATURAL GAS PIPELINE
AND THE WORKS AND FACILITIES CONNECTED THEREWITH AND
INCIDENTAL THERETO,

AND

IN THE MATTER OF A PANEL TO REVIEW THE ENVIRONMENTAL
ISSUES RELATED TO THE PROPOSED ALASKA HIGHWAY GAS
PIPELINE.

THE CHAIRMAN: DR. H. M. HILL

MEMBERS:

DR. O. HUGHES
MR. L. CHAMBERS
MR. B.J. TREVOR
MR. C. WYKES
DR. D. LACATE

P R O C E E D I N G S

VOLUME 9

WHITEHORSE, Y.T.

JULY 11th, 1977

CANADIAN ARCTIC
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I N D E XVOLUME 9 - JULY 11, 1977Page No.ASSOCIATED PROJECTS

Dr. Schilder	1660
--------------	------

HYDROELECTRIC DEVELOPMENT IN YUKON

Mr. Mussivand	1662, 1686, 1701
Mr. Bouckhout	1678, 1684, 1693
Dr. Lacate	1676
Mr. Wykes	1684, 1703
Mr. Saker	1685
Mr. Yewchuk	1687, 1701
Dr. Hughes	1690
Mr. Chambers	1691
Mr. Lazerte	1691, 1702
Mr. Romaine	1692
Mr. Templeton	1695
Dr. Schilder	1700

SHAKWAK PROJECT

Dr. Schilder	1706, 1757, 1760
Mr. Luke	1706, 1712, 1715, 1722, 1733, 1738, 1741, 1745, 1756, 1762
Mr. Bouckhout	1711, 1715, 1720, 1737, 1741, 1765
Mr. Saker	1712, 1721, 1732
Mr. Trevor	1713, 1723
Mr. Wykes	1718, 1728
Dr. Hughes	1725, 1733
Mr. Chambers	1730

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GAS STUDY LTD.
JUL 28 1977
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343.093
E56 F58
Vol. 9

59347
59348
H 101

SHAKWAK PROJECT (Cont'd)

Mr. Coates	1739, 1747, 1767
Mr. Strileaf	1741
Mr. Surrendi	1744
Mr. Ottway	1748
Mr. Klassen	1749
Mr. Hernandez	1749
Dr. Beanlands	1752
Mr. Champion	1754, 1761
Mr. Lister	1763
Dr. Lacate	1764

ALASKA HIGHWAY RELOCATION

Dr. Schilder	1768
Mr. Coates	1770, 1776, 1779, 1782
Mr. Chambers	1771, 1778, 2032
Mr. Bouckhout	1774, 1776, 1780, 1783, 1815, 1838, 1851, 1867, 1881, 1890
Mr. Wykes	1775
Mr. Champion	1777
Mr. Surrendi	1779, 1826
Mr. Hernandez	1779
Mr. Lister	1781
Mr. Templeton	1785, 1816, 1822
Mr. Lazerte	1820, 1878
Mr. Trevor	1820, 1823, 1844, 1846
Mr. Surrendi	1839
Mr. Romaine	1845, 1859, 1870, 1883, 1888
Mr. Wahl	1849
Mr. Saker	1857, 1877
Dr. Hughes	1858, 1876
Mr. Myer	1880, 1891

1 Whitehorse, Yukon Territory

2 July 11th, 1977

3 (PROCEEDINGS RESUMED PURSUANT TO ADJOURNMENT)

4 MR. CHAIRMAN: I'd like to
5 call the meeting to order. Before I outline the procedures
6 for those people who haven't attended the hearings before,
7 I will ask Mr. Bouckhout if he has any comments to make on
8 the material that was presented late Friday afternoon --
9 Friday evening.

10 MR. BOUCKHOUT: No, Dr. Hill,
11 not as yet. I have read the major portion of the Wildlife
12 Branch brief and I have not yet completed it, so I'd like
13 to complete reading that particular brief before I make any
14 comments if comments are warranted.

15 MR. CHAIRMAN: Thank you. The
16 procedures in this hearing are modified as we go on from
17 time to time, depending on the material that we're hearing.
18 Today, we are receiving information on associated projects
19 and also, we have a section on other issues related to the
20 pipeline proposal along the Alaska Highway.

21 Today, we'll finish our hearings
22 on the Alaska Highway proposal as presented by Foothills.
23 Tomorrow and Wednesday, we will hear information on the
24 alternates in the Southern Yukon and also on the Dempster
25 link, that is the alternates to move Alaska gas south
26 through the Southern Yukon and also the Dempster link which

1 is an associated project - possible project to move Alaska
2 gas -- or Mackenzie Valley gas south to the main line.

3 So today, we are hearing
4 information on possible associated projects and we have
5 with us N.C.P.C. and Department of Public Works who are here
6 to discuss the Shakwak project and the YTG Highway Branch.

7 As I noted, we have also on the
8 list, other issues and I would like to know if anyone would
9 like to present to the panel any other issues. Mr.
10 Hernandez?

11 MR. HERNANDEZ: I indicated
12 last week that Mr. Templeton would be discussing the agency.

13 MR. CHAIRMAN: Okay, fine.
14 Anyone else?

15 MR. ROMAIN: We have a couple
16 of things that we would like to include under other issues.
17 One deals with the adverse weather effects on construction
18 schedules, another one deals with the question of
19 environmental specifications and controls.

20 MR. CHAIRMAN: Okay, fine.
21 Then after we're through associated projects, we'll hear
22 from Mr. Templeton, followed by your, Mr. Romaine.

23 Now, the procedures for
24 associated projects I would like to follow are these, that
25 we will read into the record, a short comment on associated
26 projects. The panel staff will do that, Dr. Schilder.

1 Then we will hear from the companies or participants involved
2 in the associated projects and I'd like to start with
3 N.C.P.C. followed by Department of Public Works and followed
4 by YTG Highways.

5 After we hear from the, for
6 instance N.C.P.C., on what possible associated projects there
7 would be, we will ask the other participants to comment on
8 the associated projects and ask the panel staff, the panel
9 and the audience to ask questions if need be.

10 So to get things going, I'll
11 ask Dr. Schilder to read in the prepared statement.

12 DR. SCHILDER: Ladies and
13 gentlemen, the panel wishes to make the following statement:
14 Whitehorse, July 11, 1977.

15 Foothills Pipe Lines Limited has
16 made application to construct a forty-eight inch diameter
17 natural gas pipeline, generally following the Alaska Highway
18 through the Southern Yukon as part of a system to carry gas
19 from Northern Alaska to meet western American markets. As a
20 result of information provided by Foothills, discussions
21 at community meetings, review by professional staff, a
22 series of preliminary public hearings in Whitehorse from
23 June 13th to 17, the Environmental Assessment Panel has
24 defined a number of major environmental issues.

25 It is the intent of the panel
26 to examine these issues in detail with the aid of expert

1 witnesses during the public hearings scheduled from July the
2 5th to 15th, 1977. Last week, the panel discussed some
3 physical and engineering aspects with specific interest in
4 route selection as well as construction of the proposed
5 pipeline project.

6 Today's program is devoted to
7 potential developments associated with the proposed pipeline
8 project and other issues. The panel for today's program
9 identified three major themes: hydroelectric development,
10 Shakwak project, Alaska Highway relocation and potentially
11 other issues.

12 Hydroelectric development.
13 Compressor stations along the route of the proposed pipeline
14 project, represent sites of major potential energy consump-
15 tion. All stations in the Yukon are proposed to be indepen-
16 dent of the existing electrical network. Natural gas
17 delivered by the pipeline would be used as the primary
18 energy for gas compression type turbines and compressors,
19 while local power needs for auxiliary equipment at each
20 station would be supplied by small generators operating
21 on natural gas and diesel fuel.

22 The necessary electrical energy
23 could be also obtained from outside commercial sources.
24 This would increase the existing power requirements and
25 could lead to various potential land use conflicts as well
26 as potential environmental impacts in the Yukon.

1 MR. CHAIRMAN: Could we stop
2 there Dr. Schilder? Now, could you, from N.C.P.C., please
3 introduce yourselves and if possible, if you could write
4 your names on cards so that our transcribers could be able
5 to perform their duties.

6 Do we have a marking pencil
7 over in the panel staff table here?

8 MR. MUSSIVAND: My name is Toffy (P)
9 Mussivand from N.C.P.C. Mr. Chairman, ladies and gentlemen,
10 we have prepared a brief statement with regard to hydro-
11 electrical development at Yukon, specifically related to
12 possible development of pipeline or other block loads.

13 If you permit me, Mr. Chairman,
14 I would like to briefly outline some of the potentials, some
15 of the required load at this time that we are aware of, as
16 well as some of the process that we have to go through in
17 order to have one or several plants in service.

18 I would start with regard to the
19 potential. Briefly, there is somewhere between ten to
20 eighteen thousand megawatts hydro potential in Yukon on
21 various river basins mainly Yukon River basin and its
22 tributaries. Of this potential power, one could say some-
23 where between six to ten thousand megawatts could be produced
24 totally in Yukon. Just for clarification, megawatts means
25 one thousand kilowatts.

26 Let me just explain a few words

1 with regard to load requirements. The type of load require-
2 ments that we have experienced, they are naturally grouped
3 in two classes. The first one is normal gradual growth.
4 This mostly depends to development gradually with regard to
5 mining as well as residential requirement for power.

6 We group these as gradual
7 growth and from experience and a statistical analysis, this
8 seems to be somewhere between five to ten per cent per year.
9 Obviously, the numbers I'm quoting here, they're all
10 preliminary. The second group is what they call block load,
11 single block load and this is of major significance because
12 at this time, the peak load in Whitehorse system is about
13 fifty megawatts, however, if you look at the requirements
14 for peak loads or single loads, you will find these require-
15 ments are significantly higher than fifty megawatts which
16 is the present requirement.

17 For example for information,
18 some of these loads, if they are provided by hydroelectric,
19 we are in the process of making some statistical analysis -
20 it appears to have the following requirements with regard
21 to pipeline and other development. If it is in order, I
22 would like to read these requirements.

23 We have estimated for normal
24 growth, the category number one which I mentioned earlier,
25 somewhere between zero to a hundred megawatts for the next
26 ten years. The reason I say zero to a hundred all depends

1 to what would be socio-economical development in the North,
2 especially Yukon.

3 Two, pipeline. We have infor-
4 mation that the pipeline will require somewhere between
5 two hundred to three hundred fifty megawatts. Of course,
6 this might be changed with regard to the length and
7 changes that might be occurred when the final decision is
8 made, should a pipeline be approved for construction.

9 Smelter. We have also estimated
10 of load requirements for smelter and that is about some-
11 where between three hundred fifty megawatts to one thousand.
12 There is another category which we have listed here, is
13 other mining and that's estimated to be from a hundred to
14 three hundred megawatts. So, for next ten years, it is
15 estimated the work load or load required would be somewhere
16 between six hundred thirty to fifteen hundred megawatts.

17 I am sure you appreciate Mr.
18 Chairman, the numbers are very far from each other, but I
19 don't have to go to reasons why they're so far from each
20 other. Basically, they're all preliminary.

21 Okay, how this relates to
22 N.C.P.C. on hydro development. Obviously, if these loads
23 are required, the customer or who requires the load,
24 whether it is mining or pipeline, they are looking for
25 sources of energy which first would be economic, secondly,
26 it would be acceptable by people in Yukon as well as the

1 rest of Canada. This must be economically, environmentally,
2 sociologically all acceptable and practical. Therefore, we
3 feel in Yukon, there is potential to provide these loads
4 with development or hydro projects, though of course, the
5 development of hydro projects requires time, requires
6 funds and resources to do many things.

7 We feel before you could
8 develop any of these projects, you require to do five
9 major steps or tasks. These are:

10 The first one, one has to
11 identify the objective or the requirement in detail - what
12 is required, when it is required and what are the deviations
13 from today in future. Perhaps one could summarize, these
14 are related to load requirements.

15 The next phase or the next
16 step that has to be looked in detail and that is to find
17 out all the solutions that answer and meet these require-
18 ments. All alternatives have to be looked at, whether
19 they are hydro or non-hydro sources such as fuel, such as
20 solar, such as hydro. Once the alternative solutions or
21 alternative answers meets the requirements, then another
22 process has to be taken care and that is what I'd like to
23 call evaluation.

24 Now, in this evaluation stage
25 is the stage that I feel is the most complicated part of
26 process for development of any project, especially hydro

1 development. During this evaluation phase, one has to look
2 at many considerations and aspects of development of any
3 project. I would like to consider and summarize these
4 evaluations in the following categories:

5 The first one, you have to
6 look at is environmental implication and impact of any of
7 those alternatives which meets your problems and solves the
8 problem.

9 The second one is the
10 economical aspect or considerations which you have to
11 consider whether it is economic or not, because if it is
12 not economic, I'm sure the people, agencies that require
13 the power would not utilize the source that perhaps you are
14 suggesting to be used.

15 The third one, these are not
16 in priority order. The third one is sociological aspect.
17 One cannot avoid to look at the sociological aspect of any
18 development and N.C.P.C. has, in their policy of looking
19 at the project, to look at sociological aspects and
20 implications of any development.

21 So, once these factors have
22 been evaluated, hopefully, based on all these factors
23 and many perhaps which I have overlooked or have not
24 mentioned here, then a series of priorities will be
25 assigned to those projects identified and hopefully the
26 first one or the best one will be selected.

1 Once that is selected, obviously
2 you have to go and find ways and approaches to implement,
3 if everything is correct, everything is acceptable. When I
4 say everything acceptable, I mean whether it is economic,
5 it's sociologically accepted, it's compatible and so on.
6 Then, the next phase would be implementation which means
7 approval of many agencies, funding, cost sharing arrange-
8 ments, commitments, from users. When I refer to user I
9 mean the large block of power users like pipeline, like
10 smelter, mining companies and so on.

11 Once these are negotiated and
12 final arrangements have been made, then the process of
13 construction or implementation of project is going to take
14 place. We'd like to also add one more phase in our
15 process of development of project and that's what I'd like
16 to call post-implementation phase.

17 What really this phase includes
18 is to go back and find out if the project has been
19 implemented, is serving the purpose which it was supposed
20 to serve. Also, find out the mistakes which a human
21 being could make on the present knowledge of human beings,
22 so to improve future undertakings.

23 The time required from
24 conception to implementation of any of these hydroelectrical
25 projects, is estimated, based on the knowledge from other
26 areas of Canada and other parts of the world, is somewhere

1 between seven to ten years. At this time, there has been
2 numerous numbers of potential sites for hydro development
3 in Yukon identified. Unfortunately, the amount of infor-
4 mation which we have is not in detail, that it could pin-
5 point where they are located, how high, what capacity, what
6 cost and when. However, in summary, I would say there are
7 more than forty sites identified as possible potential
8 hydro development.

9 These forty sites are those
10 sites that, they have potential hydro capacity of more than
11 fifty megawatts. There are a numerous number of smaller
12 sites which could produce from several megawatts to fifty
13 and somewhere between.

14 Therefore, you could see the
15 number of potential sites are not limited. As I mentioned
16 earlier, the evaluation phase hopefully limits these to
17 only a few, otherwise, there is a much more and longer
18 time required to narrow down these alternatives, selections
19 or choices.

20 Basically, I'd also like to
21 mention a few words with regard to what we call advantages
22 of utilizing hydro power sources over other sources of
23 energy for power. I'm sure none of these are new to you.
24 I'd like to repeat them.

25 One, availability. Although
26 there are several other primary sources for electrical

1 energy production, i.e. gas or oil, coal, et cetera, however
2 at the present time, hydro power is the only local energy
3 source with proven availability for power duration in
4 Yukon.

5 Two, abundance. I'm sure you
6 do not need me telling you how lucky we are in Yukon that
7 we have so many rivers and so many lakes. There is an
8 abundance of water.

9 Three, renewable resources.
10 Water is a renewable resource as you know and production
11 of power from water does not deplete this resource. Just
12 recycling of really vast solar energy which produces as a
13 result of changes of climate and season, we have the
14 different hydrological cycle and the water.

15 Four, the cost compatibility.
16 With fuel prices and possible future escalation of fuel
17 prices, we feel hydro power will provide and prove to be the
18 least costly alternative for source of energy.

19 Five, non-pollutant. The hydro-
20 electric is perhaps the cleanest energy source. The reason
21 I say perhaps, there are accidents in all the hydro
22 development with minor -- perhaps if you wish to call,
23 pollutant like some oil -- very insignificant, spill
24 in water. However, when you look at the compatible,
25 comparable, conventional source of energy, I'm sure you'll
26 find hydro would be the least or actually non-pollutant

1 source.

2 Possible environmental
3 implication. Mr. Chairman, I would like to mention, I do
4 not believe that there is any activity of human being on
5 earth which can be totally, perhaps away from interference
6 with environment. Everything we do, your existence and my
7 existence, is actually based on disturbance to the environ-
8 ment. So, should a pipeline to be developed, should a
9 decision to be made with regard to any development in North,
10 I am sure there is the requirement for energy.

11 I'm sure you require to do some
12 interferences with the environment, to provide the energy
13 if the decision is to go ahead or not to go ahead, with
14 regard to the pipeline or any other development. So we
15 believe the hydro development will be least affecting the
16 environment and with monitoring and controlling the project,
17 with regard to environment, may not only minimize and reduce
18 the implications and adverse affects, it may also return
19 this implication hopefully to a positive side with regard
20 to hydro development.

21 You may question how and why.
22 For example, I'm sure the vast amount of fluctuation you
23 may have in some of the rivers or lakes could be somehow
24 controlled or somehow reduced and hopefully some advance
25 or positive encouragement or enhancement of environment
26 could happen.

1 Many other perhaps possibilities,
2 I'm not expertise to indicate those, but I'm sure you and
3 some of the members here would appreciate those much more
4 than I.

5 The other one - the other point
6 I'd like to mention is the other sources, the conventional
7 sources of energy like fuel and gas and coal, not only not
8 are in Yukon in abundance or proven to be there and
9 to be utilized for source of energy, also these are depleting
10 as you know, as well as, they are used for raw materials
11 and would be unwise to utilize depleting source of energy
12 when you might have other sources of energy which they are
13 not depleting as well as -- at this time, they are not
14 utilized for, or as, raw materials.

15 The next item is efficiency
16 of hydro projects. If you check with a skilled expertise
17 in an area, you will find the hydroelectric plants are the
18 most efficient of any source of plants for energy.
19 Economic effect in Yukon, we believe also development of
20 hydroelectric plants will have positive effects on the
21 economy of the Yukon as well as in Canada. The simple
22 analysis is, when you're producing power with water which
23 you have here, you bring in revenue to the local and
24 regional economy. If you're going to produce power by
25 other means, you have to actually export funds in order to
26 bring, perhaps as is presently, oil and other resources for

1 development and production of power.

2 The next item on my list, since
3 I'm getting a little, perhaps long, is the life of hydro-
4 electric plants. The life of hydroelectric plants generally
5 is longer than other conventional power production systems.
6 The maintenance of these plants, once they're built, is
7 comparatively lower than the rest.

8 The next item is, should one
9 day come that all non-renewable resources such as oil and
10 gas are depleted, the hydro projects which perhaps are
11 utilized during utilization of other sources, will continue
12 to provide some sources of energy. In fact, perhaps in
13 future, potential for export as well as utilization within
14 the local and regional.

15 One might ask, well, these are all
16 good parts and positive sides of hydro development. What
17 are the negatives and difficulties and problems associated
18 with -- I'm sure you appreciate there are many difficulties
19 associated with any development. The difficulties that
20 N.C.P.C. faces right now, basically are related to
21 allocation of funds for doing the studies. When I refer
22 to studies, I mentioned earlier these are studies of
23 environmental, sociological, economical, engineering and so
24 on.

25 These studies have not been
26 completed. Some of them actually have not even started.

1 One could ask me why not. Basically, N.C.P.C.'s mandate is
2 to provide the power with least costs. The commission
3 would like to protect their present consumers from
4 additional costs for development of hydro plants or other
5 source of energy for unknown or uncommitted consumer.

6 So, what really I mean is this.
7 Unless the Federal Government or the agencies that do
8 development such as pipeline, smelter, other mining, come
9 forward and make other commitments for utilization of the
10 energy produced and/or contribution to the cost of a study
11 and implementation, the Commission cannot proceed with a
12 study and/or implementation. First, because there is no
13 funds allocated and available to the Commission.

14 Secondly, whatever the
15 Commission has available to them at this time, is coming
16 from present consumers. As I mentioned earlier, present
17 consumer requires only fifty to sixty megawatts power. So
18 any additional development requires additional funding
19 from various sources.

20 One could ask what are the
21 activities which have at least been taken care of up to this
22 point by the Commission with regard to this subject. I'd
23 like to just briefly outline, Mr. Chairman, we have identified
24 on a very preliminary basis, the potential sites. We also
25 have had some very preliminary negotiations with several
26 regulatory agencies. Also, we have had some discussion

1 with regard to the prospect customers, such as mining
2 companies and pipeline groups.

3 We also have had what I call,
4 in-house cleaning with regard to N.C.P.C.'s activities and
5 cost savings and increased efficiencies. So, we also have
6 made proposals to various governments - Federal Government
7 agencies with regard to the scheduling, the timing, the
8 questions that have to be answered, the studies have to be
9 taken care of - in order to be able to provide hydroelectric,
10 if a decision is made to go ahead with any development in
11 the North.

12 So, the proposal has gone
13 through to the Federal Government. We have requested their
14 attention to the funds requirement, to the possibilities
15 of alternative funding as well as to possible delays as well
16 as advantages and disadvantages of these delays.

17 What is to be done in future?
18 There are many concerns and activities which have to be
19 performed and included in studies and undertakings in the
20 future. I'm not going to bore you with all those.
21 Basically, I outline them again just for emphasis. The
22 requirements have to be more detailed, analyzed, the
23 alternatives have to be identified, the implications have
24 to be in detail, studied. Those are environmental,
25 sociological, economical and technical implications. The
26 funding and financial arrangement has to be negotiated,

1 finalized, prior to proceeding with a study or implementation,
2 as well as some commitment has to be made by the prospect
3 consumer for utilization of the power produced.

4 As I mentioned earlier, Mr.
5 Chairman, the question of scheduling is very important.
6 It would normally take seven to ten years to have a plan
7 in service. It is already late for N.C.P.C. to meet the
8 proposed schedule of some of the developments. Not all,
9 we could meet a majority of them, but there are several
10 that we cannot meet because of some delays.

11 So, if a decision is made to
12 proceed with a pipeline, or other development, and also if
13 there is a decision made by the government, by the local
14 people and the rest of technical and non-technical consider-
15 ation to use hydro power for these developments, it is very
16 much important to have an immediate decision with regard
17 to financial arrangements and other resources to do the
18 studies required to come to a decision whether you should
19 use hydro or can you use hydro with what costs and so on.

20 Mr. Chairman, I will end my
21 discussion at this point. I'd like to thank you for the
22 patience you have shown and the rest of the audience.

23 MR.CHAIRMAN: Thank you very
24 much Mr. Mussivand. I'd like to make a few comments about
25 associated developments because I don't believe we can get
26 into the situation of debating the environmental pro's and

1 con's in any depth of hydroelectric power which may or may
2 not be an associated development in this case, however,
3 because of our set-up, we are obligated to ask the question
4 among ourselves and answer it publicly, what are the likely
5 developments which will fall out of this pipeline project.

6 Your presentation has of
7 course, put forward a number of questions. The one you
8 closed with is whether or not in fact, it would be possible
9 to develop or utilize existing hydroelectric sources for
10 the pipeline development because as you say, it would take
11 seven to ten years to plan these developments. That's a
12 usual time lag I realize.

13 The question is that obviously,
14 some of these studies have started and are you at the start
15 of the seven to ten year planning phase or are you into
16 that time period in any way?

17 MR. MUSSIVAND: Mr. Chairman,
18 do you wish me to answer you?

19 MR. CHAIRMAN: Yes please.

20 MR. MUSSIVAND: We are at the
21 beginning of that period, although we have some reconnaissance
22 already completed, however, one cannot really say we are
23 in the seven years, ten years period.

24 I'd also like to qualify one
25 aspect with regard to the scheduling. Should a decision
26 be made by some contributor to the cost by the Federal

1 Government or prospect consumer, it's possible -- this is
2 important -- it's possible to compress the time required
3 to let's say, somewhere between five to seven years and
4 stage develop, the hydroelectric resources for utilization
5 in any development.

6 As I said, I'd like to put that
7 "IF" very thick and pronounced.

8 MR. CHAIRMAN: Okay, the next
9 point I got out of your talk was that in order to start
10 planning, one would have to know whether your power was
11 a competing source of power and have some kind of
12 assurance I suppose, that the power would be used if in
13 fact, it did turn out to be an acceptable source of power.

14 It would appear that you're
15 into a chicken and egg situation of not being able to
16 start planning because you don't want to spend your
17 customer's money in planning for major developments. Could
18 you -- have you any idea of whether or not hydroelectric
19 power would be available at a competitive price to the
20 applicant?

21 MR. MUSSIVAND: Yes, Mr.
22 Chairman, the answer to your question is yes -- no, I don't
23 know which one I'm talking -- which question I'm referring
24 yes, however, I'm referring to your question whether it is
25 compatible as far as the cost is concerned. The answer
26 to that question is yes.

1 Now, the reasons we say this
2 is, if you take the average of the development - of the
3 plans for production of power, whether in the Yukon or
4 other part of Canada and the States, you will find out
5 that generally, the development of hydro projects and the
6 cost of production and maintenance in the long run, is
7 lower than the rest of the conventional systems.

8 So, I would be able to say that
9 we feel comfortable to indicating that the cost of the gen-
10 eration of power from hyroelectric is compatible with
11 other sources and we are optimistic on that.

12 MR. CHAIRMAN: The next
13 question I think is to Foothills and that is really the
14 acceptability of the type of power for the use in the
15 compressor stations. Would hydro power actually be
16 acceptable type of power in compressor stations?

17 MR. BOUCKHOUT: Yes sir, Dr.
18 Hill, it would. The normal means of generating power for
19 primary power requirements which occur at compressor
20 stations, is to utilize line gas, however, it is possible
21 to design the stations to operate with hydroelectric power.

22 MR. CHAIRMAN: I believe that's
23 all my questions right now. Do any of the panel members
24 have questions of Mr. Mussivand? Dr. LaCate?

25 DR. LaCATE: Yes Mr. Chairman.
26 If possible, I'd like to get down to a specific in relation

1 to this project. I'm thinking of the announcement or fairly
2 recent announcement in the paper that Squanga Lake was
3 a possible site for a future hydro development. How does
4 Foothills feel about this N.C.P.C. hydro development? Will
5 it flood out their pipeline corridor, is a water body
6 crossing being planned, weighted pipe et cetera or is this
7 proposal that far along?

8 MR. MUSSIVAND: Mr. Chairman,
9 do I have to answer this question?

10 The project that you mentioned,
11 sir, is first of all, very small project, is three megawatts
12 and N.C.P.C. does not see this project, or three megawatt
13 project, would be really that much utilized or useful to
14 any large load requirement. The minimum load requirement
15 which we have information, would be much more than three
16 megawatt.

17 The reason, there are several
18 alternatives including this project as you mentioned, have
19 been looked at by N.C.P.C. is, if there is no large
20 development in the next several years and there is some
21 growth with a large development, like residential and so on,
22 what is the least costly source of energy for normal gradual
23 growth if any. So this is with regard to that possibility,
24 sir.

25 MR. CHAIRMAN: Mr. Bouckhout?

26 MR. BOUCKHOUT: What Mr.

1 Mussivand stated of course, is very true. As far as the
2 implications of such a development to the pipeline project,
3 it would obviously depend upon location and extent. This
4 I would think, ^{could} /to a degree, be pre-planned depending upon
5 the status of N.C.P.C.'s planning.

6 There would be implications if
7 a hydroelectric development were to flood an area through
8 which a pipeline was routed. This is not unheard of. This
9 has happened before and appropriate steps have been taken
10 by the pipeline company.

11 DR. LaCATE: To turn it around,
12 assuming a pipeline is built, once it's in place, does this
13 eliminate an alternative power site and how does N.C.P.C.
14 feel about this? This would be anywhere in the Yukon.

15 MR. MUSSIVAND: I'm sorry sir.
16 Could you repeat that question? I have difficulty to
17 understand.

18 DR. LaCATE: Yes. Once a
19 pipeline's in place, does this eliminate a potential
20 site for N.C.P.C.? Are you concerned about this?

21 MR. MUSSIVAND: Yes, we are
22 very much concerned for two reasons. Once -- if the pipe-
23 line is placed and completed, I'm sure the pipeline people
24 require energy, some sort of energy, whether utilizing the
25 gas turbine or other sources. This is very much of
26 concern to us because we believe before or -- actually the

1 cost that might go through to production of gas initially
2 and perhaps conversion of these in future to hydro which is
3 a cost, we prefer - and this is my personal preference of
4 course - we prefer that hopefully, if there is any develop-
5 ment to be taken care of, the hydro development also, could
6 be a stage to produce this power requirement. That's one.

7 Secondly, if the pipeline is
8 placed, then whether the hydro development in large
9 quantity is possible or not, we still believe that in long
10 term, the hydro potential of Yukon will be utilized by
11 local original people, so maybe in the next ten, twenty
12 years, this hydro development will be developed. However,
13 if the pipeline and other developments take place earlier,
14 then hydro development maybe, perhaps comes earlier.

15 The third perhaps concern is
16 if the pipeline is located without mutual planning and
17 exchange of information with N.C.P.C., there is a possibility
18 of cost to some consumer, whether he is a consumer of gas
19 or the consumer of power from hydroelectric. Therefore
20 what I'd like to suggest is any development and planning
21 with regard to hydro as well as the pipeline or other
22 development, should go perhaps mutually hand to hand.

23 MR. CHAIRMAN: There's an
24 obvious follow-up question here. Have you reviewed the
25 route alignment of Foothills for their Alaska Highway
26 proposal and are there potential conflicts?

1 MR. MUSSIVAND: Mr. Chairman,
2 we have information from the pipeline company as well as
3 Foothills and this is with regard to the previous route as
4 was proposed. The latest changes with regard to possible
5 changes to the route, we have not received official route
6 as yet.

7 With regard to previous route,
8 Mr. Chairman, there are several alternatives which could be
9 compatible and they are not in conflict.

10 MR. CHAIRMAN: Could you out-
11 line the areas that are in conflict. I think that's what
12 we're interested in.

13 MR. MUSSIVAND: No, I
14 mentioned they are compatible. They are not in conflict.

15 MR. CHAIRMAN: Oh, they are,
16 all compatible, even the Squanga Lake routing at the
17 present time?

18 MR. MUSSIVAND: I believe again,
19 if -- I should make a clarification here -- if there is
20 a requirement for larger hydroelectric development, then
21 the smaller hydro development would not be developed.
22 The reason and the rationality is, those small projects of
23 only three to five to ten megawatts are basically to meet
24 requirements if there is no large development.

25 Like anything else, the smaller
26 development, they are more costly than large development

1 because perhaps, of implication of economical scale. So,
2 if there is a larger development going ahead, then the
3 other smaller projects will not be needed.

4 MR. CHAIRMAN: Yes, I understand
5 that, but I believe we're into two types of discussion here.
6 One is whether or not an associated development would be
7 developed to power the pipeline compressors, but also as a
8 panel since you are here, we would like to know whether
9 or not any of the possible sites in the Yukon that you have
10 looked at, would be put in jeopardy by the present pipeline
11 routing?

12 MR. MUSSIVAND: I'm sorry Mr.
13 Chairman, I misunderstood your question. With this regard,
14 I believe I have to have some time to review the latest
15 route of present system of route for the pipeline before I
16 could answer that question.

17 I do not believe at this time,
18 I know of any conflict; however, I'd like to qualify the
19 answering until we review the present route.

20 MR. CHAIRMAN: Yes, as far as
21 I know, there has only been one route proposed and that is
22 the Alaska Highway route. Possibly, you're referring to
23 the N.E.B. suggestion.

24 MR. MUSSIVAND: That's right.

25 MR. CHAIRMAN: Yes. As far as
26 the route proposed then, could you answer that part of the

Mr. Mussivand
Mr. Wykes
Mr. Bouckhout

1684

1 question.

2 MR. MUSSIVAND: As far as I know
3 there is no conflict.

4 MR. CHAIRMAN: Thank you very
5 much. Mr. Wykes?

6 MR. WYKES: I'd like to
7 address this question to Foothills and ask Mr. Bouckhout if
8 he could let us know whether or not internally, Foothills
9 has made any commitments to be able to convert their
10 compressor stations to electrical power at a later date?

11 MR. BOUCKHOUT: To my knowledge
12 Mr. Wykes, we have made no firm commitments to convert.
13 We have, however, had discussions with N.C.P.C. on the
14 possibility of doing this. It is possible to pre-design
15 the stations so that they initially operate via the
16 utilization of line gas with a subsequent changeover to
17 hydroelectric power.

18 This has been considered in
19 general discussions with the Northern Canada Power
20 Commission.

21 MR. WYKES: We've been talking
22 about the use of hydroelectricity for compressor stations.
23 What about the construction camps themselves? Are you
24 planning to use your own source of power for the power
25 at the construction camps or not?

26 MR. BOUCKHOUT: Yes sir, we are.

1 MR. WYKES: That's at all
2 camps even if they're in close proximity to existing grid
3 or --

4 MR. BOUCKHOUT: I'll turn this
5 over to Mr. Saker.

6 MR. SAKER: If the power was
7 available close to a campsite, we would go that route.
8 Again, only if it were available and not taxing the N.C.P.C.'s
9 existing supply, but right now, we plan using independent
10 power plants.

11 MR. WYKES: So you haven't
12 really had any discussions with N.C.P.C. then to date,
13 regarding using their electricity at your construction
14 camps?

15 MR. SAKER: Not I, but other
16 members of the panel might have.

17 MR. WYKES: Okay, perhaps I
18 could address one more question this time to N.C.P.C. and
19 it gets back to the topic we were just discussing on some
20 of these alternative routes through the Yukon. You say
21 you're not very sure on the exact locations, but it seems
22 to me on reading the -- I think it was called the Yukon
23 Power Study that was done for N.C.P.C. two years ago?

24 There might be some major
25 conflicts in terms of some of the potential sites - large
26 scale potential sites that were studied at N.C.P.C. at that

1 stage. I'm thinking along the Yukon River, perhaps the
2 Stewart River or the Pelly River. Would you care to comment
3 further on that please?

4 MR. MUSSIVAND: Sure. With
5 regard to present or I should call previous route of the
6 proposal for pipeline, as I mentioned earlier, we do not
7 or I do not know at this time, any conflict with regard
8 to major development. As I mentioned earlier, there are
9 numerous numbers of potential and as I say, somewhere
10 between forty to fifty alternatives.

11 There are several of these
12 alternatives which we feel economically, sociologically,
13 perhaps environmentally, appears to be most attractive
14 ones, however, again this is based on reconnaissance
15 analysis. Those preferred alternatives will not be
16 affected with the existing or previous route of the pipe-
17 line. Though there are, if you're referring to the study
18 which was done previously, there are many alternatives if
19 you look at the map of Yukon on the larger and the smaller
20 basins and tributaries which have been identified earlier
21 in many different studies.

22 These are identification of
23 small and large developments and there are so many of them
24 that any activity would affect them if they are going to
25 be built ; however, as I mentioned earlier, several of
26 these are the most attractive ones.

1 MR. WYKES: I would just like
2 to follow up a little bit further if I would and correct me
3 if I'm wrong. It seemed to me that in that study that was
4 done, you looked at the -- I think you centred in on
5 possibly four or five sites ultimately, which you thought
6 from an environmental and from an economic point of view,
7 might be the most acceptable sites. It just seems to me
8 that perhaps two of those four or five that you centred in
9 on could be in conflict right now with the proposed pipeline
10 -- or with a possible pipeline routing.

11 MR. MUSSIVAND: I'm just trying
12 to get some more information from our Regional Manager here.
13 I'm just having the difficulty to identify those sites.

14 MR. WYKES: I'm thinking
15 specifically of Pelly River and also the Yukon River in the
16 vicinity of Five Fingers Rapids, in that area.

17 MR. YEWCHUK: If you're
18 referring to those and you're referring also to the
19 proposed pipeline by these gentlemen here, that's following
20 the Alaska Highway, not the Klondike Highway.

21 MR. WYKES: Yes, I realize
22 that, I strayed away from the Alaska Highway pipeline
23 routing and we're going to get into this later in the
24 week, but I just wondered if you would mind commenting on
25 those possible route selections, of any conflicts.

26 MR. YEWCHUK: With respect to

1 the Klondike Highway, Mr. Mussivand had indicated that he
2 was not familiar with that route and the exact locations of
3 those and that he would like to have a look at the route
4 first and at the sites before he would say whether there
5 would be a conflict or not.

6 There is a possibility of a
7 conflict and in order to overcome that, then we would have
8 to work very closely with the pipeline people to ensure
9 that one doesn't conflict with the other.

10 MR. CHAIRMAN: Possibly, this
11 may be something we should comment on when we're talking
12 about the alternative routes. I wonder if it would be
13 possible to discuss those tomorrow with us, especially
14 along the Klondike Highway?

15 MR. YEWCHUK: You wanted us to
16 be here tomorrow?

17 MR. CHAIRMAN: Yes, certainly
18 when we are looking into the alternative routes as much
19 as we'll be able to, we should identify any resource
20 conflicts that are potential.

21 MR. MUSSIVAND: Mr. Chairman,
22 I'd just like to make a comment with regard to a previous
23 question and then come back hopefully to reply to your
24 question right now.

25 As I mentioned earlier, we'd
26 like to have the opportunity to discuss with the pipeline

1 people as well as other considerations, during the planning
2 stage of it, the possible conflict and possibility of
3 solving this conflict if any.

4 With regard to the new route,
5 as I mentioned earlier, we like to have some time to review
6 it and go into detail to the route as well as what is
7 available in the Commission to see if there is any conflict.
8 So, we will welcome your request that someone to be present
9 here tomorrow when that route is discussed and unfortunately,
10 I'll have to excuse myself, but I would perhaps like to
11 ask our Regional Manager to be present here. However, I
12 don't think at that time - tomorrow, we'll be in a position
13 to indicate whether there is any conflict or not.

14 We'd like to have some time
15 to review and have official route, although perhaps you
16 have seen it in the paper or announcement, however, we'd
17 like to have an official route sent to us or proposed to
18 us and we'll check these ones to see if there is any
19 conflict.

20 MR. CHAIRMAN: Yes, I think
21 there's probably some misunderstanding between us, what
22 our role is at this early stage in looking at alternate
23 routes. We were asked by the Minister of Fisheries and
24 Environment to hear information on alternative routes
25 and to supply him with as much as advice as we could,
26 based upon that limited information.

1 There is no proposal. There is
2 a request by the National Energy Board that the Dawson
3 route be looked at in the next year or so. I've forgotten
4 the exact timing of that, but it has emerged as a possibility.
5 I think the panel would be remiss in not pointing out some
6 of the resource conflicts, even at this early stage for the
7 Klondike Highway route.

8 I realize that you would like
9 to have a route drawn on the map in order to study it, so
10 would we, but we are in the position of offering advice at
11 a preliminary stage and we very much appreciate your
12 participation.

13 MR. MUSSIVAND: We would be
14 pleased to assist on the preliminary basis.

15 MR. CHAIRMAN: Thank you very
16 much. Dr. Hughes, did you have a question?

17 DR. HUGHES: No, I think all
18 those questions that were asked answered my question, but
19 just how many potential sites do you have in this three
20 hundred megawatt category? We can't be talking about very
21 many, are we?

22 MR. MUSSIVAND: The sites that
23 have been included or considered for anything above I
24 believe, two hundred or a hundred and fifty megawatts to a
25 thousand megawatts, there are approximately eighteen to
26 nineteen sites.

1 MR. CHAIRMAN: Mr. Chambers?

2 MR. CHAMBERS: A question to
3 Mr. Mussivand. On the hydroelectric development there's
4 also an associated development with that and that's the
5 delivery system. You now have Yukon Electric being the
6 distribution system in the Yukon. I wondered if you'd make
7 some comments in light of potentials and possibilities of
8 a grid system because that is also something we're concerned
9 with.

10 MR. MUSSIVAND: At this time,
11 our mandate indicates that, if there is any development,
12 especially this magnitude, N.C.P.C. would be the only
13 company responsible for production and distribution of it
14 and transmission of course.

15 I'd like to qualify this one.
16 Unless this is following the franchise, and that has to be
17 clarified.

18 MR. CHAIRMAN: Fine. I lost
19 Mr. Bouckhout. Would Foothills like to comment on the
20 general questions which the panel has in terms of likelihood
21 and associated hydro development would evolve to
22 power the compressor sites if the pipeline were to proceed?

23 MR. LAZERTE: Yes, I think we
24 can, Dr. Hill. We have advised of course, that our plans
25 are not very far advanced in this regard, but we have done
26 preliminary engineering studies, preliminary layouts with

1 regard of course, to the timing of the project.

2 In other words, we realize that
3 following the present construction schedule, that we would
4 require power in all probability before it could be supplied.
5 I think that's been borne out by the discussion this after-
6 noon, however, what we did do was look at the incremental
7 costs that would be involved now to provide for future
8 power installations and they are rather moderate. The
9 operational aspects of the use of hydro power I believe are
10 attractive.

11 I think it's understood that
12 there are maintenance benefits to be gained by the use of
13 power. There are some small negative aspects with regard
14 to control and what have you, but generally speaking,
15 we are receptive to the type of suggestion that's been made
16 here. Does that suffice as a general statement or would
17 you like me to be more specific?

18 MR. CHAIRMAN: No, I think
19 that satisfies me - my question pretty well. Are there
20 any questions from other participants to either Mr.
21 Mussivand or Foothills on this discussion? Mr. Romaine?

22 MR. ROMAINE: Yes Mr. Chairman.
23 I believe Mr. Myers has a number of questions, but I would
24 like to ask one first of Foothills and just try to get a
25 handle on the discussion on the questions that were raised.
26 Perhaps Mr. Bouckhout could comment.

1 Do you see a problem with hydro
2 development such as the Squanga Lake in terms of having an
3 impact on your proposed alignment? What I'm thinking of,
4 perhaps some of the section of the pipeline may be flooded
5 in the future and that type of thing.

6 MR. BOUCKHOUT: That's a
7 remote possibility I think. In most cases, of course in
8 the route, we're very close to the highway so anything
9 that would affect our pipeline route would also affect the
10 highway. I'm sure in N.C.P.C.'s planning and feasibility
11 studies, they are taking into account, current development
12 and in that respect then, our planned development would
13 additionally be taken into account.

14 There is of course, the remote
15 possibility that that might happen and as I indicated
16 earlier, this is not a unique situation. In fact, I
17 believe right now, Westcoast Transmission is in the process
18 of reacting to just such a situation. It is possible. The
19 implications of course, depend upon the extent of the
20 development and the precise location of the development.

21 MR. ROMAINE: Thank you.

22 MR. CHAIRMAN: Mr. Meyer?

23 MR. MEYER: Thank you Mr.
24 Chairman. I intend to observe your instruction of not
25 debating hydroelectricity here today.

26 I have perhaps one question

1 and one observation. The focusing on the question of line
2 gas versus hydro. I'm not sufficiently, I confess, familiar
3 with the operation of the Yukon Power Utility that I fully
4 understand your funding arrangements.

5 I heard you allude to the need
6 for funding in order to get some of these studies going.
7 Do you as a matter of course, received funding assistance
8 from the Federal Government or would this be in the term
9 of short term funds or what is the situation up here and is
10 that reflected in your block rate, I guess would be the
11 other part of the question?

12 MR. MUSSIVAND: Mr. Chairman,
13 the question as I understand is, whether the funding
14 which might be available for development of these hydro
15 projects, are we receiving funds from the Federal Government
16 - the answer to that part of the question is yes, we borrow
17 money from the Federal Government. We do not - N.C.P.C.
18 does not receive subsidies from the Federal Government.
19 We borrow it and we pay a high rate of interest as well.

20 Two, whether the cost of this
21 study and/or implementation would be finally a part of the
22 energy. The answer to that question, yes. Should Foothills
23 or any developer provide some funding to the study and/or
24 implementation of the results, then this cost will be
25 considered during charging the rates and so on.

26 If the Federal Government

1 provides again, some form of financial arrangement has
2 been worked out - has to be worked out to really consider
3 these aspects. The important issue is, as I mentioned
4 earlier, N.C.P.C. does not feel the present consumer should
5 pay for any development, unless they're going to use it.

6 MR. CHAIRMAN: Yes, as a matter
7 of clarification Mr. Meyer, I think that, is it not correct
8 that N.C.P.C. is a class 'C' Crown corporation under the
9 Federal Financial Administration Act, so it's governed by
10 that Act and the answer is yes.

11 MR. MEYER: Thank you Mr.
12 Chairman. The implication that I was looking at was in
13 terms of a full cost rate structure and I think I'm re-
14 assured on that point.

15 The second comment I have Mr.
16 Chairman is only by way of observation and again refers to
17 the question of line gas versus hydro from an environmental
18 point of view to the extent that we already bear or will
19 bear some cost associated with the pipeline to the degree
20 that we go to an alternative source for the power associated
21 with the pipeline. We then of course, bear the potential
22 of further environmental cost. Thank you.

23 MR. CHAIRMAN: Thank you.
24 Mr. Hernandez, do you have any comment on the associated
25 project, hydro development? Mr. Templeton?

26 MR. TEMPLETON: Dr. Hill, I

1 -- you asked if I had -- if we had questions to either
2 the N.C.P.C. or Foothills. I think my question is to you
3 if I could be permitted to.

4 Last week, this Inquiry spent
5 long and useful hours of discussion on the adequacy, details
6 and environmental concerns of the proposed gas pipeline and
7 we've had the detailed public input and participation of
8 the Department of Fisheries and Environment, Yukon Game
9 Branch and numerous other interested parties. Today you've
10 heard the associated developments to do with hydroelectric,
11 including, I guess, transmission lines which it would follow
12 and you're going to hear the highway realignments and
13 paving associated developments.

14 But the question I have is, I
15 would like to ask whether those developments which are done
16 by governmental organizations will get the same vigorous
17 public evaluation by the same participants that Foothills
18 has had. I think what's good enough for one development is
19 in my opinion, good enough for all developments and regard-
20 less of who is the proponent. The impact of a bulldozer
21 is the same whether it's hired by the government or a pipe-
22 line.

23 Therefore, I strongly urge
24 that all developments whether they be pipelines, roads,
25 mines or power projects, receive an equal treatment of a
26 complete and thorough and a public hearing and an impact

1 assessment. I realize that you, Dr. Hill, do not speak
2 for government policy, but you're holding public hearings
3 and you can make public recommendations.

4 If the E.A.R.P. process is to
5 be a success and I'm sure we all hope it is, it must be a
6 watchdog for alterations to the environment and as such,
7 must report its findings objectively, regardless of whether
8 the developer is a government or an industry.

9 I don't know whether you can
10 tell me Dr. Hill, if these projects listed today that you're
11 going to discuss under associated developments will be
12 examined publicly before they proceed?

13 MR. CHAIRMAN: Yes Mr.
14 Templeton. I'm not a maker of government policy, but I am
15 familiar with some of it. The Environmental Assessment
16 and Review process as written in a policy, states that
17 each Minister responsible for agencies within the Federal
18 Government and that includes Class "C" Crown corporations
19 of which N.C.P.C. is one, must ask themselves the question,
20 whether or not a proposed development could cause significant
21 environmental change and if the answer is yes, they must
22 submit the project for review to an environmental assessment
23 panel.

24 The choice of the - or the
25 decision-making on significance is up to the Minister
26 associated with the development. So consequently, the

1 panel is not a watchdog in that sense in the making of that
2 decision. The people are. The panel though, once the
3 project is referred, treats all projects all the same,
4 whether the proponent is a Federal department or is a
5 developer who seeks in this case, the use of Federal lands.
6 The decision that the Minister must make in this case -
7 the Minister of Indian and Northern Affairs is what con-
8 ditions to put on the use of Federal lands.

9 As far as the Shakwak project
10 is concerned, it has been looked at by the Department of
11 Public Works. They have found that the project could
12 result in significant environmental change and consequently,
13 have referred it to an environmental assessment panel and
14 the Environmental Assessment Panel has issued guidelines
15 for the development of an environmental impact statement.
16 The Department of Public Works is in the process of
17 developing that Environmental Impact Statement.

18 The Impact Statement will be
19 reviewed publicly after the panel receives it from the
20 Department of Public Works.

21 Does that answer your question?

22 MR. TEMPLETON: Well, I under-
23 stand your explanation. I suppose it's a matter of degree
24 and without getting any more objectionable than I usually
25 am, I cannot help but bring up the Dempster Highway and you
26 said well, they should ask themselves. I would suggest

1 that perhaps they could go back and have a good talk with
2 themselves. What I'm talking about here is not the pipeline
3 along the highway, but the highway itself.

4 I think surely the Dempster
5 Highway is an associated development as of last -- a week ago
6 today when the Energy Board came out with its report. I
7 realize that construction has started many years ago, but
8 that still doesn't -- that doesn't get around the environ-
9 mental and social problems as brought about by it. We
10 haven't heard at any public hearings, evaluating the
11 environmental and social impacts of the Dempster Highway.
12 I noticed there weren't any in the Mackenzie either and my
13 question to - I guess to government and I'm hoping to get to
14 them through you, is when can we expect them.

15 Are the Yukon Game Branch and
16 the Canadian Wildlife service monitoring the effects of the
17 highway on the Porcupine caribou herd? What harvest is
18 being taken? Is the Department of Fisheries Environment
19 evaluating the impacts on fish and whether the culverts are
20 restricting migration and affecting the reproductive
21 successes? Does the highway have a social impact on Old
22 Crow?

23 I don't know we can - anyone
24 can estimate the incremental impacts of a pipeline on top
25 of that of a highway when you do not know what the impact
26 of the highway itself is. I think my question and it's

1 unfair to ask you, but I hope that your reports will reflect
2 this, is when can we expect the D.P.W. to present at public
3 hearings, its impact statement.

4 Now, I've been asking this
5 question for many years and I get a pat on the head and say
6 it's in good hands. Well, they've worn the hair out of the
7 top of my head and I'd sure like to see this while I'm still
8 alive. So I would hope that perhaps you might indicate
9 this. I think we're all in the -- looking after the whole
10 process, is to try and protect the environment against
11 unnecessary change and I would hope that your reports
12 will reflect that government agencies regardless of what
13 class they are, and we'll all put our own classes on it
14 perhaps, have a responsibility as well as the private
15 sector. Thank you.

16 MR. CHAIRMAN: Thank you.
17 Does the panel staff have any questions? Dr. Schilder?

18 DR. SCHILDER: Mr. Chairman, I
19 have a question for Mr. Mussivand, representing the
20 Northern Canada Power Commission.

21 You have indicated in your
22 brief that the normal growth in the Yukon within the next
23 ten years would require anything between zero to one hundred
24 megawatts of new power capacity. In case of pipeline, there
25 would be a requirement for additional two hundred or be-
26 tween two hundred and three hundred fifty megawatts.

26 MR. YEWCHUK: If we did have to

1 develop a large hydro project such as this one to provide
2 power for the pipeline, a separate transmission system would
3 have to be developed. It would probably be connected into
4 our Whitehorse system, but I would think that we would be
5 looking at a larger voltage transmission system than what
6 we've got right now.

7 DR. SCHILDER: I have a
8 supplemental question. Does the N.C.P.C. at present, have
9 a high voltage line which would basically, more or less,
10 parallel the Alaska Highway?

11 MR. YEWCHUK: All we have with
12 a high voltage line that parallels any highway is the
13 one that goes to Faro which is the Klondike Highway and the
14 Campbell Highway. If you want to parallel the Alaska
15 Highway, I suppose you could say from Takhini Sub-station
16 to Aishihik Power Plant. It does parallel a highway,
17 although it is a little ways off the highway and that is
18 a hundred and fifteen thousand volt system.

19 MR. CHAIRMAN: Are there any
20 questions or comments from the floor?

21 MR. LAZERTE: Could I ask one
22 question by way of clarification?

23 MR. CHAIRMAN: Yes, sure.

24 MR. LAZERTE: I would just
25 like it clarified as to the seven to ten years that was
26 described at one point as being the planning phase. I

Mr. Lazerte
Mr. Wykes
Mr. Mussivand

1703

1 would like to know how many years it would take to install
2 the system and have it operational or whether that is in
3 the ten year figure?

4 MR. MUSSIVAND: Mr. Chairman,
5 I apologize if I did not express - this seven to ten years
6 includes planning, design, evaluation as well as implemen-
7 tation. It takes up to ten years to have the hydro project
8 in service producing power.

9 MR. CHAIRMAN: Mr. Wykes has
10 a question.

11 MR. WYKES: I would like to
12 follow-up with N.C.P.C., these projections of five to ten
13 year growth per year as natural growth and whether or not
14 that would include the potential for increased power demands
15 from a stable force for operation and maintenance of a
16 pipeline within less than perhaps the five to seven year
17 planning period that you're just getting started on.

18 MR. MUSSIVAND: Mr. Chairman,
19 I'm sure you appreciate, all of you appreciate that the
20 difficulty any developer has with regard to projections in
21 future, the only way at least at this time, is available
22 to utility companies such as ours, especially with
23 the difficulties we have in the North with the small amount
24 of load.

25 The projection which I mentioned
26 five to ten per cent or twelve to fifteen per cent is

1 assuming no input from the maintenance and the work force
2 that might be required to the pipeline or any other develop-
3 ment. Should nothing happen with regard to the pipeline
4 and/or other development in the North, it is our estimate
5 based on past that there will be somewhere between five to
6 ten to fifteen per cent growth or normal growth.

7 Should development come here
8 and be approved, again I'd like to refer to that planning
9 stage and interchange of information between developer and
10 the utility company. We have to consider that additional
11 growth which really requires additional -- perhaps
12 additional power.

13 MR. CHAIRMAN: Thank you. Do
14 you wish to say anything else in summation on the subject,
15 Mr. Mussivand?

16 MR. MUSSIVAND: Basically Mr.
17 Chairman, as a normal human being and hopefully good
18 citizen and good company, we'd like to actually advocate
19 the utilization of hydro power. We feel, considering all
20 aspects of it, is a compatible, least environmental effect
21 on it. Perhaps much more positively with regard to
22 economical and social development, therefore, we recommend
23 strongly a hydro development for utilization of power if
24 any development comes.

25 MR. CHAIRMAN: Thank you very
26 much. Well, with that, I believe we'll break for coffee
and come back to the Shikwak project.

(PROCEEDINGS ADJOURNED).

1 (PROCEEDINGS RESUMED PURSUANT TO ADJOURNMENT)

2 MR. CHAIRMAN: Dr. Schilder,
3 would you please read into the record, the associated
4 project, Shakwak?

5 DR. SCHILDER: Ladies and
6 gentlemen, I would like to continue in reading the panel's
7 statement concerning the second major theme for today's
8 discussion.

9 Shakwak Project. The Shakwak
10 Project involves the reconstruction and paving of a Yukon
11 section of the Alaska Highway from the U.S.A./Canada
12 boundary to Haines Junction. The proposed project includes
13 changes in the present vertical and horizontal alignment
14 which could possibly result in an overlap with the proposed
15 pipeline route or other land uses in this area.

16 The approximate ten years
17 construction period could possibly commence next year.
18 The project itself is being subjected to the Federal
19 environmental assessment and review process.

20 MR. CHAIRMAN: Thank you Dr.
21 Schilder. Welcome D.P.W. from the Shakwak Project. I'm
22 not sure who's the spokesman. Is it Mr. Luke or Mr.
23 Johnson-- Mr. Luke. Could you please outline the Shakwak
24 Project and in relation to the proposed pipeline, give us
25 your impression of any conflicts or any interfaces between
26 your project and the pipeline proposal?

1 MR. LUKE: Well, first of all,
2 the Shakwak Project as Dr. Schilder outlined -- he outlined
3 only sixty per cent of it. The project involves the re-
4 building and the paving^{of}/the Alaska Highway from the Alaska/
5 Yukon border to Haines Junction and then continues south
6 of Haines Junction down to the customs house at Mile 42, only
7 forty-two miles from Haines, Alaska for a total length of
8 five hundred and sixteen kilometers or three hundred and
9 twenty-two miles. So that is the total project.

10 Now, the pipeline route -- I've
11 been hearing and also reading in the press, there are three
12 proposed routes, two of these routes will have nothing to
13 do with us at all, but the third route if it does come down
14 the Alaska Highway and passing Kluane Lake, Haines Junction,
15 then it will parallel about sixty per cent of our project.

16 I have had a set of the proposed
17 alignment for the pipeline given to me by the Foothills
18 Company which I have looked at. They have also told me
19 this is a preliminary alignment that minor adjustments in
20 all probability will be made in many places as they get
21 closer to construction. This is exactly the same as a
22 highway process. It's like an iteration process, you find
23 out first what valley you're going to travel in, then you
24 narrow it down to which side of the valley you're going to
25 travel on, then you narrow it down to about a thousand
26 foot corridor, then you run in some lines and you start

1 shifting a hundred feet and fifty feet and finally you get
2 down to the line that you're going to live with.

3 I believe that Foothills is at
4 some stage in that area in that iteration process. They
5 may be further along the line than we are. We have yet to
6 -- well, we know what valley we're going down and we know
7 plus or minus maybe two or three hundred feet one way or
8 the other where our line will be for about ninety per cent
9 of our alignment. But we have a lot of engineering to be
10 done on the project yet. We are just getting started. We
11 will be starting an environmental impact study hopefully
12 within two or three weeks.

13 Before we do any construction,
14 this environmental process will have to be complete,
15 reviewed and it must-- since the project is a unique one
16 in the -- Canada, in that the United States is funding the
17 project, it must satisfy the requirements of not only our
18 own Department of Fisheries and Environment, but it must
19 also satisfy the requirements of the Environmental Protection
20 Agency of the United States, so it has a dual role.

21 As far as conflict in
22 alignment, if the Alaska Highway route for the pipeline
23 is chosen, then obviously, we're going to have to work
24 very closely with the pipeline people in selecting the
25 route. There will be places where the highway will cross
26 the pipeline. This will be inevitable. These are

1 problems that can be worked out. There is one area where
2 the highway and the pipeline may be hemmed into narrow
3 corridor. This is at the south end of Kluane Lake.

4 To this end, about a month
5 ago, representatives from pipeline and myself and the
6 Superintendent from Kluane National Park walked over the
7 area, had a good look at it. We have appreciation for the
8 problem and we have a few ideas of how we propose to solve
9 that. The details have yet to be worked out. We're not
10 far enough along with our engineering yet to outline
11 exactly what these details are yet.

12 MR. CHAIRMAN: Okay, well,
13 what you finished on is where I'll start.

14 As you probably know, in our
15 process of environmental assessment, where there are
16 difficult environmental problems, we have to determine how
17 severe those problems are environmentally and then we have
18 to ask ourselves whether or not there are any solutions to
19 those problem areas which are environmentally acceptable.

20 One of the areas that we've
21 been dealing with at the end of last week was Sheep
22 Mountain and the question I have is related to-- it's an
23 engineering question, and that is, it was proposed at one
24 time to us that in fact, the pipeline could be placed
25 adjacent to the road around Sheep Mountain. In fact,
26 using the road as the construction platform, placing the

1 pipe in -- right beside the road, in a trench right beside
2 the road.

3 This question is to both
4 yourself and to Mr. Bouckhout and it really relates to a
5 solution - a possible solution which we would have to
6 consider that could be environmentally acceptable, without
7 judging whether it would be or not, is it in fact, possible
8 to lay the pipeline from the road around the base of Sheep
9 Mountain and have a viable pipeline and a viable road.
10 So it's a question to both Foothills and to D.P.W.
11 Possibly yourself first, Mr. Luke.

12 MR. LUKE: Well, I'm not sure
13 what the pipeline will require, but if they need a berm
14 off the side of the road so many meters wide, I'm sure that
15 we can do this. It might mean widening the width of the
16 cut that we would normally take around the south end of the
17 lake and going back into the rock phase, but we're not
18 talking about any great distance.

19 I think at the time Mr.
20 Bouckhout and Mr. Saker and I were looking at that, I forget
21 the exact dimension we were looking at, but in the order
22 of about twenty, twenty-five feet?

23 MR. CHAIRMAN: Twenty, twenty-
24 five feet from the edge -- shoulder of the road, is that
25 the idea?

26 MR. LUKE: Well, on the south

1 end of the lake, you have a very steep rock side coming up
2 out of the lake and you're putting a road in there, of
3 course, you've got a notch there in, to get your base. The
4 back slope of the rock cut is not quite vertical. It's
5 about one horizontal to six vertical is our normal design of
6 rock, unless we run into problems.

7 There's two choices in here.
8 You can increase the rock cut, invert, and put the pipe-
9 line on the space you make available or you can shift the
10 road over and put the pipeline on the outside. Now, these
11 are details which pipelines and my staff can work out to
12 a mutually acceptable engineering standard. But we have
13 not done this yet, our planning is not that far along, but
14 I'm sure a solution can be worked out.

15 MR. CHAIRMAN: But you feel
16 confident that if in fact, twenty more feet or twenty-five
17 feet whatever it is, is required in the rock face cut, that
18 this would not lead to instability problems in the rock
19 face that would be a problem to your highway?

20 MR. LUKE: No, that's a hard
21 rock in there. We can get a good face and if there's a few
22 spaces between the rock faces, we may have to put up some
23 type of retaining wall to keep material from slumping down
24 off there, but this we would normally do if the pipeline
25 was not there anyway.

26 MR. CHAIRMAN: The existence of

1 the pipeline so close to the road is of no real concern to
2 highways, is this what I understand? To the highway
3 maintenance and operation, it offers no special problems?

4 MR. LUKE: I don't see what
5 would be any problem. Presumably, the pipeline would be
6 on a slightly lower level than the road itself. We would
7 have a guardrail all along the edge which we would be
8 installing anyways to keep vehicles from going off into the
9 lake. This then would keep vehicles from going off into
10 the pipeline, so they're virtually in a corridor of their
11 own, although it would be adjacent to the road.

12 MR. CHAIRMAN: Okay, could
13 Foothills answer my question as to the acceptability of
14 a pipeline going that close to the road?

15 MR. BOUCKHOUT: I would
16 reiterate what Mr. Luke has said. We have discussed this
17 obviously, with respect to final design as to precisely
18 how that section would be designed whether it would be on
19 the outboard side of the road or the inboard, whether it
20 might be a berm situation or buried situation. These are
21 details which we have definitely not settled on.

22 As a result of our meeting
23 and on-site visit at Sheep Mountain, we are currently of
24 the opinion that if the technical details can be worked
25 out and these include such things as scheduling and other
26 matters that it -- from the consideration we've given it to

1 date, it looks like it definitely could provide a viable
2 solution.

3 MR. CHAIRMAN: Thank you.
4 You mentioned scheduling problems. What are these problems?

5 MR. SAKER: With regard to
6 problems, if -- we've talked about this in the construction
7 end of it and if necessary we can delay completion of this
8 portion of the pipeline to fit in with the Department of
9 Public Works, construction of that section of the highway.

10 In other words, we would have
11 a short section of pipeline that we could do the following
12 year or tie in with another piece of work in that vicinity.

13 MR. CHAIRMAN: So I guess the
14 answer is back to -- the question is back to Mr. Luke
15 whether or not it's within the realm of your construction
16 --possible construction, foreseeable construction schedule
17 understanding the approvals you have to go through to
18 construct that portion within the proposed time constraints
19 for completion of the total pipeline of Foothills (Yukon)
20 Limited?

21 MR. LUKE: I think we can.
22 We have discussed this briefly and I think we can. The
23 scheduling would be tight of course, but I think it can be
24 done.

25 MR. CHAIRMAN: So your plan
26 would be to construct both the pipeline and the road at

1 the same time?

2 MR. LUKE: I think in this
3 case, the road would have to go in first.

4 MR. CHAIRMAN: Yes, but you
5 know, as one process, the road and the pipeline. All right,
6 you would actually pave the road before you would lay the
7 pipe?

8 MR. LUKE: Well, we may not
9 pave it, but we would do our building blasting and rock
10 moving and roughing into sub-grade before the pipeline
11 would go in.

12 MR. CHAIRMAN: Right and this
13 six to one slope - one six slope you're talking about,
14 would this cause a cut anywhere near the known salt lick
15 for the sheep on the mountain?

16 MR. LUKE: We've looked at that
17 and it will stay outside that area.

18 MR. CHAIRMAN: Thank you.
19 Mr. Trevor has a question I think.

20 MR. TREVOR: I'd like to get
21 down to a few basics on this. What is the present narrowest
22 width of the road going around the corner by the rock face
23 now?

24 MR. LUKE: I don't know. I
25 could guess, because the present highway was built I think,
26 Dick, to about a twenty-six foot top is it? Twenty-eight

10-1-77

2 MR. TREVOR: And there's
3 probably three or four feet on the inside for a ditch right?

4 MR. LUKE: Yes, there is a
5 ditch on the inside. There is a maintenance problem
6 because there never was a proper ditch in there.

7 MR. TREVOR: And given no
8 pipeline, what is your plans with coming around that corner
9 for the reconstruction?

10 MR. LUKE: On the sub-grade,
11 prior to putting on the gravel base courses, it's about
12 forty-four feet.

13 MR. TREVOR: That would be
14 including the ditch?

15 MR. LUKE: No, the ditch would
16 be a bit beyond that.

17 MR. TREVOR: That's about
18 forty-eight so you're going to have to take out something
19 like sixteen or eighteen feet of that rock face just to
20 accommodate your present plans?

21 MR. LUKE: Well, that is if
22 the new road sticks on the alignment of the old road which
23 it will not of course, because the curves in there are too
24 sharp. They're unacceptable for modern day standards.

25 MR. TREVOR: So if you wanted
26 to reduce the curve and that's a left-hand curve as I

1 recall, we may have to cut into the bank even farther?

2 MR. LUKE: Well, seventy-five
3 or ninety feet, sure. But we'd be doing this whether the
4 pipeline was there or not.

5 MR. TREVOR: And the pipeline
6 would add another twenty or thirty feet to that?

7 MR. BOUCKHOUT: It might Mr.
8 Trevor, however, on final design consideration, it would
9 be minimized, therefore it could be cut down somewhat I
10 would suspect but I don't know all the implications of it.

11 MR. TREVOR: No, it just seems
12 to me that we're looking at something like moving that rock
13 face back, anything in the order of eighty to a hundred feet
14 at that narrowest point there. That seems to me to be a
15 very major undertaking.

16 MR. LUKE: It is a major
17 undertaking. I don't deny that.

18 MR. TREVOR: So the effects up
19 slope could be quite considerable?

20 MR. LUKE: The effects of
21 which?

22 MR. TREVOR: The effects up
23 slope, that's up the side of the hill. It could be quite
24 considerable.

25 MR. LUKE: Well, if you went
26 back at a one and six and I was looking at the depth of the

1 rock cut. It could be in the order of around sixty feet
2 and there, you're only gaining ten feet at the top.

3 MR. TREVOR: Thank you.

4 MR. CHAIRMAN: I have a question
5 related to heavy transport equipment crossing your road,
6 the heavy equipment carrying the pipes. Would this offer
7 any special problems for the road either before or after
8 reconstruction? I realize the reconstruction will go on
9 probably long after the anticipated date that the pipeline
10 has been placed, but during construction of the pipeline,
11 are there any special sort of mechanics' problems which
12 would emerge due to the heavy equipment?

13 MR. LUKE: There should be
14 none at all because we're building the road to take those
15 heavy loads.

16 MR. CHAIRMAN: Okay, the
17 other question relates to a warm pipeline crossing near --
18 under your road and whether or not any thaw settlement caused
19 by the pipeline would cause you problems under your road.

20 Could you explain, if you have
21 to deviate from the present right-of-way, what your design
22 criteria are with regard to permafrost, whether or not
23 you're designing to preserve the permafrost through insulation
24 or not and whether or not a warm pipeline running close to
25 your road would offer you any problems?

26 MR. LUKE: You're talking

1 about a crossing of the pipeline under the road in an area
2 where there is permafrost underneath?

3 MR. CHAIRMAN: Yes.

4 MR. LUKE: We'd obviously
5 have to insulate the pipe. We're also looking at techniques
6 of insulating the fill. They've had a number of test
7 sections in the past. We've done some in the Northwest
8 Territories, the State of Alaska has done some. There have
9 been some in Northern Ontario and everybody agrees that
10 insulation placed in a highway fill works very well.

11 There have been no, as far
12 as I know no large scale applications of this to date,
13 but we are definitely thinking along the lines of putting
14 insulation in. Well, it took many of the kilometers in the
15 area from north of Burwash Landing and particularly up in
16 the Beaver Creek area where you do run into a lot of the
17 discontinuous permafrost.

18 MR. CHAIRMAN: Do you know
19 what exists now under the present right-of-way? Is it
20 melted, are the ice rich soils melted right out under the
21 existing highway or is melting still taking place or is
22 there a stable ice situation under the present highway?

23 MR. LUKE: This I don't
24 really know. We haven't done any testing in there and of
25 course, when the road was built in '42, the ramifications
26 of building on permafrost were not fully understood.

1 But to be honest with you, we
2 don't know, but we propose to find out.

3 MR. CHAIRMAN: But your
4 criteria would be to retain the permafrost in most locations
5 as it exists now, the ice rich permafrost.

6 MR. LUKE: This is what our
7 basic design feature would be, would be to maintain the
8 permafrost regime and prevent it from thawing underneath
9 the sub-grade.

10 MR. CHAIRMAN: And you're
11 confident that a warm pipeline passing under your road
12 could be insulated enough to preserve your criteria?

13 MR. LUKE: Well, that's just
14 a question of thermo-dynamics. If you put enough insulation on
15 that, you're bound to solve it.

16 MR. CHAIRMAN: Yes, we've
17 been dealing with this question of thermo-dynamics for some
18 time. Any other questions from the panel? Mr. Wykes?

19 MR. WYKES: Mr. Luke, I was
20 wondering in those high energy streams on the Kluane Lake,
21 whether or not you were planning or there might be a
22 different type of design in terms of keeping the channels
23 of those river beds open to pass through the culverts and
24 bridges along those small streams. Do you have any thoughts
25 in looking at the past problems that -- in terms of a
26 maintenance point of view you've had on those streams,

whether or not you might be thinking of different techniques
to deal with those problems?

MR. LUKE: I've had thoughts
on those streams and they've been bordering on nightmares.
If you have a permanent solution of one, let me know.

At the present time, I don't
think there is a permanent solution for those fast alpine
streams. I think you're thinking particularly Williscroft,
Congdon, Nines -- there is about a half a dozen of
them in there that, in front of those gorges and the foot-
hills of the St. Elias Mountains come roaring down the
mountains, pass under a short span bridge or a large culvert
and form an alluvial fan into Kluane Lake.

These are headaches at the
best and at the present time, I don't see any other solution
than an annual expenditure of maintenance to go in there with
a bulldozer and clean out the channels, straighten out things,
get out your dead wood, build up the berms on the side and
hope for the best for the following spring. But it's an
annual maintenance problem.

MR. WYKES: One other
question in terms of the Slims River crossing at Sheep
Mountain, we've heard some representation I believe it was
by Parks Canada, that their recommendation would be that the
pipeline traverse the Slims River downstream of the present
road alignment.

1 I just wonder from a highway's
2 point of view, from you and perhaps from Mr. Bouckhout, from
3 a pipeline point of view, if you can anticipate any particular
4 problems on which alignment would be further upstream in that
5 case on a continuing -- you know, moving delta, change in
6 delta?

7 MR. LUKE: Well, on our
8 road alignment, we would fall almost on the present rock
9 fill. At least, that's my present thinking. The rock fill
10 is not wide enough at the present time. We'd obviously have
11 to widen that out.

12 MR. WYKES: I realize that and
13 I believe the alignment sheets submitted by Foothills show
14 the stream crossing to be upstream of the present highway
15 alignment. My question is really, could you anticipate any
16 problems from let's say a highway maintenance integrity
17 point of view from the highway being upstream of the pipeline
18 crossing or downstream in terms of changes that might take
19 place in that delta?

20 MR. LUKE: I can't say it
21 would offer any problems at all.

22 MR. WYKES: Mr. Bouckhout,
23 any comments or not?

24 MR. BOUCKHOUT: Perhaps Mr.
25 Saker could make a comment on that particular topic. I just
26 have a couple of comments on an earlier topic very briefly.

1 As I recall on the old Canol
2 Road, I think some borings have been done with respect to the
3 effects of the old Canol Road west of Norman Wells on perma-
4 frost. As I recall, of course, that road has not been used
5 for some time, that the permafrost has all melted out from
6 the road beds, despite the fact that the road has not been
7 used, therefore, I would think that the same may apply. I'm
8 speaking in generalities, the same may^{very} well apply to the
9 Alaska Highway.

10 The other very brief point
11 I wanted to make was that normally what's done in terms of
12 pipeline crossings of roads, major roads, is that you go to
13 very deep burial. It's not normal six foot top, you
14 generally go to something in the order perhaps of fifteen
15 to twenty feet, and depending upon the local implications,
16 rather than trenching through the road, it's usually a boring
17 process as well. So these points may be relevant to your
18 earlier discussions.

19 With respect to the crossing
20 of the Slims, Jack may have something to say.

21 MR. SAKER: We propose to
22 cross the Slims on the upstream side of the highway for
23 stability reasons primarily, however, again, we can build
24 it anywhere given the right amount of money. It's a matter
25 of again, going back to stability in our opinion.

26 MR. CHAIRMAN: Stability of?

1 MR. SAKER: Of the pipeline
2 on that alluvial plain that / ^{cross} the Slims River.

3 MR. CHAIRMAN: I see.

4 MR. SAKER: And a shorter
5 crossing also of the Slims River itself.

6 MR. CHAIRMAN: So, are you
7 aware of the stability problem or do you anticipate one?
8 What sort of stage is that in your thinking?

9 MR. SAKER: Well, I
10 personally am not aware. Our geotechnical people would have
11 more knowledge than I have on this, but the highway has, in
12 my observation, has never shifted so that if we were on the
13 upstream side of it, we could only assume the best of the
14 pipeline as well.

15 MR. CHAIRMAN: All right.
16 Okay, thank you. I have a follow-up question to Mr. Wyke's
17 question on these high energy streams. One of the solutions
18 that Yukon Pipelines Limited appears to have taken is to go
19 higher up on these streams with their route location in order
20 to avoid the deltas to a large degree and cross more or less
21 at the point of non-erosion and non-aggradation.

22 Would there be -- would your
23 consideration of the re-routing of the highway include this
24 type of a major realignment or would you stick pretty well
25 to the existing alignment by definition?

26 MR. LUKE: We would stick

1 fairly close to the present alignment which is down close to
2 the lakeshore. To get back up it would be prohibitive in
3 grades frosting up that high.

4 MR. CHAIRMAN: I see. Any
5 other questions from the panel? Mr. Trevor?

6 MR. TREVOR: What is the
7 present timing for the reconstruction, Mr. Luke?

8 MR. LUKE: Well, this is
9 subject of course, to the environmental studies but we will
10 -- assuming that there is no impediment to the construction
11 and that we do get the okay after the environmental studies,
12 then hopefully, we would like to see two jobs going next year
13 if humanly possible.

14 Then there would be more than
15 in '79. We would have probably three peak years, '80 to '81,
16 '82 and then it would begin to taper off after that. Most
17 of the earth moving and rock moving should be done in about
18 six construction seasons. The seasons following that would
19 be based of course, on paving and final trimming clean-up
20 and move out.

21 MR. TREVOR: When you say
22 there are three heavy years - '80 to '82, when would paving
23 be done, at the end, say after '82?

24 MR. LUKE: No, paving will
25 be done in segments of the -- the first segments that are
26 finished of course, will be the first ones paved, so that if

1 you travel from end to end of the project, say pick the year
2 1981 for example, you'll probably find something going on
3 over about sixty or seventy per cent of the project. You
4 might find paving on one segment, you might find base course
5 going on in the next one, you might find a segment where
6 nothing is going on except maybe pre-engineering. You run
7 into another section where there is a heavy earth moving in
8 its first season and heavy earth moving in its second season.
9 You'll find kind of a mixed bag throughout the whole length.

10 MR. TREVOR: If the Foothills
11 project along the Alaska Highway were to be approved, would
12 this alter your thinking with regard to the timing?

13 MR. LUKE: Not timing, but I
14 would say scheduling, which jobs would we call first, yes it
15 would have come in--varying on that.

16 MR. TREVOR: So that you
17 could accept paving actually going on at the same time that
18 the pipeline machinery might be using the same road to move
19 in pipe and so on?

20 MR. LUKE: Well, we certainly
21 hope they won't move their large vehicles down our freshly
22 laid asphalt, no.

23 MR. TREVOR: Well, I suggest
24 to you that that's likely to happen if there isn't some
25 co-ordination between the two.

26 MR. LUKE: I'm quite sure

Mr. Luke
Mr. Trevor
Dr. Hughes

1725

1 that Foothills and D.P.W. can work out something that's
2 mutually acceptable here.

3 MR. TREVOR: The other matter
4 that comes out of this too would be the very frequency of
5 traffic that would exist on the road which would upset your
6 ability to work somewhere.

7 MR. LUKE: Well, we've had
8 experience with this. We've built the Trans Canada Highway
9 and I think the traffic there would be slightly in excess of
10 what you might find on the Alaska Highway.

11 MR. TREVOR: Thank you.

12 MR. CHAIRMAN: Dr. Hughes?

13 DR. HUGHES: In the design
14 for the Mackenzie Valley pipeline, in crossing alluvial fans,
15 there was a proposal for deep burial over the whole width
16 of the fan in order to treat the whole fan as a channel or a
17 potential channel. Now, that might be a solution for this
18 pipeline proposal but it would be entirely unnecessary if
19 the highway design required that the channel coming down the
20 fan, be confined for all time or at least for the life of
21 the pipeline into one channel.

22 I'm sure the Foothills would
23 find it advantageous to bury to scour depth only under
24 whatever channel the pipeline people adopted for a particular
25 stream. But that is your philosophy, do I have it right,
26 that you will for any one of these streams, you'll try to

1 confine it for the life of your bridge structure or whatever,
2 into one channel?

3 MR. LUKE: Well, it's a
4 matter of economics. We're forced to do this. We cannot
5 afford to build a bridge over the entire --

6 DR. HUGHES: No, I quite
7 appreciate that. Are there some of these streams that have
8 three or four obvious potential channels, any one of which
9 you might bridge the potential overflow?

10 MR. LUKE: Well, this would
11 be the result of a study. An engineering hydraulics -
12 hydrology and geotechnical study and we would pick the one
13 that we thought would be best.

14 DR. HUGHES: With respect to
15 crossing to the pipeline under the highway, you suggest
16 insulation in order -- I'm talking now about where there is
17 some potential for subsidence and your trying to maintain
18 permafrost.

19 It's possible that the best
20 solution might be to remove any frost susceptible soils from
21 beneath the highway at that pipeline crossing. It would
22 seem that that should be done in some cases, before you
23 even build the highway, that is, on a section where the
24 pipeline construction preceded highway construction.

25 Is it likely that you will
26 have all of your route fixed to such an extent that those

1 potential crossings could be identified at the time of
2 pipeline construction and make that provision? What is the
3 scheduling in that regard? I guess that would be at this
4 time, that would be only a guess on your part, whether you
5 could have your location that far advanced?

6 MR. LUKE: Well, let's put
7 this into a time frame, if you ask me that right now, I
8 would say it would be a guess. If you ask me again about
9 the end of February next, I'd say it would not be a guess but
10 I have a far better idea of what we're going to do. If you
11 asked me again about this time next summer, I would say we
12 know almost exactly what we're going to do. If you ask me
13 again probably in the fall of '78 along with consultation of
14 the pipeline, I would say that we know exactly what we're
15 going to do.

16 Now, every one of those
17 crossings
18 / will be a unique case of its own, warranting a geo-
19 technical study to find out what's underneath and we've got
20 to treat them as individual cases. We can't get a blanket
21 solution for every one of them.

22 DR. HUGHES: No, I appreciate
23 that, but the time will allow you to make the necessary
24 provision for later construction of the highway or vice versa,
25 later crossings of the pipeline under the highway, is that
26 a fair --

MR. LUKE: Oh yes. This is

1 why, by about this time next year or even into the end of the
2 late spring, we will have a very good idea of where we want
3 to put our line and with the consultation with Foothills,
4 assuming that's the route that's going to be given the nod,
5 then in consultation between the two of us, then we can make
6 the provision for building those crossings, no matter which
7 facility is built first.

8 DR. HUGHES: All right, thank
9 you Mr. Luke. That answers my questions.

10 MR. CHAIRMAN: Mr. Wykes?

11 MR. WYKES: Mr. Luke, I have
12 two more slightly more specific questions which I appreciate
13 you might not have the details to answer yet.

14 One of them is concerning
15 construction camps. Have you got any feeling yet for the
16 size and possible location of construction camps that might
17 be utilized for the Shakwak project?

18 MR. LUKE: We're looking into
19 that. We haven't finalized any plans yet. The location of
20 camps of course, will be dictated by the boundaries of the
21 contracts which let out the construction.

22 If at all possible, we would
23 like to have a camp on the boundary between two major jobs.
24 If you let out the contract at twenty miles here and say
25 eighteen or twenty-two miles here and you put a camp in the
26 middle, then you've got a camp only serving about forty miles

Mr. Luke
Mr. Wykes

1729

1 of road.

2 In that way, we would only
3 need probably seven or eight major camps for the entire job.

4 MR. WYKES: By major, what
5 size are you talking about, numbers of people?

6 MR. LUKE: Well, our own
7 camps for pre-engineering and then the follow-up with the
8 engineering on the job itself, we normally run a large contract
9 with a camp size between twenty-five and about thirty men.
10 So if you had two jobs going on, you could double that. You'd
11 have about fifty people in the camp.

12 MR. WYKES: That includes the
13 construction camps?

14 MR. LUKE: No, that's just
15 our own.

16 MR. WYKES: What about the
17 construction camp size?

18 MR. LUKE: Well, they'll
19 vary anywhere between -- Dick, what about sixty and about
20 ninety contracts? On a major grading job where you're dealing
21 with earth moving, rock moving and so on and of course, if
22 they double shift of course, then the personnel increases.
23 But from my own experience, camps of about sixty to seventy-
24 five men are quite common.

25 MR. WYKES: I guess I was
26 really looking at the potential for either using the same

1 camp locations that could possibly be used by Foothills,
2 either at the same time or different times, depending -- and
3 this all depends on timing.

4 MR. LUKE: Right.

5 MR. WYKES: Have you looked
6 at the proposed campsite locations as submitted by Foothills
7 to see whether or not some of those could be used again,
8 depending on timing?

9 MR. LUKE: No, I haven't
10 seen these yet.

11 MR. WYKES: The other
12 question I had concerns borrow material. Have you identified
13 roughly, the total amount of borrow material needed for the
14 section between Beaver Creek and Haines Junction?

15 MR. LUKE: Only in a very
16 rough manner so far. We haven't done detailed studies and
17 surveys yet. These will come --

18 MR. WYKES: Do you see
19 possibly see, any conflict for competing for scarce borrow
20 materials on any section of that route between projects?

21 MR. LUKE: We're sure that
22 we can work out something between us.

23 MR. WYKES: Thank you.

24 MR. CHAIRMAN: Mr. Chambers?

25 MR. CHAMBERS: I was wondering
26 Mr. Luke, if you see any conflict or additional cost of

1 construction due to the moving of heavy pipe up the highway
2 during pipeline construction?

3 MR. LUKE: Well, it may have
4 effect on the present road, but on our reconstructed road,
5 I don't really see much problem there, because until such
6 time as the road is completed and paved and the white line
7 is marked down it, in which case we turn it over to somebody
8 else to look after it, we pack up and go home.

9 Until that stage comes, we
10 will maintain it. We will have bulldozers and graders out
11 there and this is something that you do normally anyway.
12 We've done this with the Trans Canada Highway and through
13 Banff Park, where they get something like 1.4 million visitors
14 to the park. I don't think you're going to get quite that
15 many in the Yukon. We've dealt with that problem.

16 We've also done the same
17 thing on the Banff/Jasper Highway, where we've had in the
18 order of half a million vehicles will pass by there in the
19 summertime. We've done this.

20 MR. CHAMBERS: Yes, my concern
21 is not so much with the numbers of traffic, but rather the
22 weight that had to be transported by trucks, where you're
23 getting that much pipe moving up the highway.

24 MR. LUKE: Right. Well as long
25 as those loads are within the legal limit, there is no
26 problem.

1 MR. SAKER: Mr. Luke has added
2 something that I was going to add that our loads won't be that
3 heavy. They will be within the legal load limits allowed by
4 the Yukon Territorial Government on / ^{their} highways or any other
5 government agency that may have governed the Alaska Highway
6 that we legally use.

7 MR. CHAMBERS: My understanding
8 and I'll get some further clarification on that, but my under-
9 standing in Alaska that there was a underestimate of operation
10 and maintenance on the Alaska Highway to the tune about a
11 hundred and sixty million dollars for which they contributed
12 to extra traffic and pipeline traffic, highway trucks and
13 so on, moving pipe to the Alyeska project.

14 MR. SAKER: But do you know,
15 did they have an overload permit or not?

16 MR. CHAMBERS: I don't know.
17 I'm not worried about the overload permit so much as the cost
18 that somebody is going to be stuck with, the Canadian taxpayer,
19 of additional operation and maintenance if it in fact, becomes
20 a fact.

21 MR. SAKER: Well, the reason
22 I asked the question was, if they were given an overload,
23 then they were contributing to the deterioration of / ^{the} highway
24 then consequently, the maintenance costs would go up. However,
25 I can't speak for the Yukon Territorial Government on their
26 highway, but I rather doubt that they would issue too many

1 overload permits to any contractor who happens to get the
2 pipeline along through Yukon.

3 MR. CHAIRMAN: Dr. Hughes?

4 DR. HUGHES: Mr. Luke, in
5 building and designing the highway in order to preserve perma-
6 frost, I presume the main reason for that is to avoid the
7 problem of subsidence. Have you any idea from past experience,
8 what the order of magnitude of the subsidence could be?

9 Let us say, particularly with
10 that portion of the pipeline between Burwash Landing and well,
11 it's pipeline miles, forty-two hundred and ten. What kinds of
12 -- what order of magnitude of subsidence would you expect on
13 your road say, if --

14 MR. LUKE: If we did not use
15 insulation you mean?

16 DR. HUGHES: Yes.

17 MR. CHAIRMAN: Could I
18 interrupt here?

19 DR. HUGHES: I was just
20 trying to get a figure that would contribute to our estimate
21 of what kinds of subsidence may occur when a warm pipeline is
22 put into the ground.

23 MR. CHAIRMAN: Our transcriber
24 tells me you're too far away from the mike Mr. Luke.

25 MR. LUKE: Okay. Well, I
26 don't think there's much parallel between a warm pipeline and

1 a highway itself. But the types of subsidence that could
2 occur, could be anywhere between zero and sixteen feet. You
3 know, take your pick whichever one you want.

4 DR. HUGHES: You say from
5 zero to how many feet?

6 MR. LUKE: It depends on how
7 much of the permafrost you can thaw out in one season. I
8 don't know how much is possible to thaw it out.

9 DR. HUGHES: Well, from
10 results on the drilling right into the old Canol Road bed,
11 it would seem that at comparable latitudes, eventually a
12 highway will thaw completely underneath. At least, the
13 Canol Road has done that and we have to take as a worst
14 case assumption for the buried warm pipeline, that all of
15 the permafrost will be removed from underneath.

16 But have you done any thaw
17 consolidation tests for instance, on samples from proposed
18 location that can give us -- can you quote some maximum
19 figures?

20 MR. LUKE: Not really because
21 this type of construction -- we don't contemplate at all. If
22 the permafrost is oh say, it only goes down six to ten or
23 maybe twelve feet and underneath is a good hard layer, well
24 then we'd probably expose it and melt it and then we're done
25 with it.

26 But if it goes down six, ten

1 or twelve feet and there is ice rich soil underneath, - frozen
2 soil or even fine grain soil, well then obviously, we want to
3 maintain that permafrost. So our design doesn't bring into
4 the fact that we want to thaw it. We want to maintain the
5 frost.

6 So then we design then to
7 either put enough fill over the top so that the annual thaw
8 layer does not reach that permafrost or we put an insulation
9 layer in there, which is what our present thinking is.

10 DR. HUGHES: Yes, I think I
11 understand the design concept, but I was hoping that you
12 might have done some thaw consolidation tests down to thaw
13 stable materials at a number of points that would give us
14 some idea of typical magnitudes of potential settlements.
15 But if you don't have those data, then --

16 MR. LUKE: We haven't done
17 any. I could pass on some secondhand information that I got
18 in discussion with the State of Alaska but I don't think that
19 would be in the best benefit to pass that on here.

20 DR. HUGHES: Well, I think
21 that kind of information could be useful to us if you could
22 provide it within the next few days, either -- I don't think
23 it would be necessary to read it into the record, if it
24 would be possible for you to give us some information on
25 that aspect.

26 MR. LUKE: All right, well

1 then, off the record then, the State of Alaska in the places,
2 has used the technique where they have designed a certain
3 height of fill. It has subsided six inches, a foot and every
4 two or three years they add a little bit more fill on top to
5 bring it back up again.

6 Eventually, after about seven
7 or eight years, this stabilizes. Then in an effort to find
8 out how far the bottom went down, they have taken cores out
9 of this and it's gone down in some places, around sixteen
10 feet. They eventually, after seven or eight years, reached
11 stability on this.

12 Now, if you're willing to
13 put up with a gravel road for about seven or eight, maybe
14 ten years, then this is quite a viable technique because you
15 don't have to use insulation. I'll make no bones about it,
16 insulation is expensive. It's a good technique because you
17 limit your insulation right away and with the expenditure of
18 money on insulation, you accomplish two things.

19 One is, you use less material
20 to put in the fill in the first place and you buy yourself
21 about eight years of time, but if you're willing to put up
22 with subsidence, annual maintenance and you've got lots of
23 material, then do away with the insulation and ^{put} up with a
24 gravel road for nine years. It will eventually stabilize,
25 so this is a choice.

26 DR. HUGHES: Right, thank you

1 very much. That's very helpful.

2 MR. CHAIRMAN: Just to clarify
3 your position, you wanted the last statement off the record
4 or --

5 MR. LUKE: I'd rather if you
6 would, yes.

7 MR. CHAIRMAN: Fine. I have
8 a question related to resource exploitation. We've spent
9 some time on talking about what sort of increased resource
10 exploitation would result as a result of the people arriving,
11 directly working on the pipeline and the people associated
12 with the pipeline.

13 The concern here of course,
14 is that there will be hunting pressures and so on which
15 would lead to a change in the status of wildlife along the
16 pipeline route. The camps that are being proposed by
17 Foothills (Yukon) Limited are in the order of six to seven
18 hundred men, is that right?

19 MR. BOUCKHOUT: Yes, this
20 would be in the order of six to eight hundred, in that
21 general order.

22 MR. CHAIRMAN: Right, six to
23 eight hundred men and this is a concern. These camps are
24 spaced along the road and they're only operational for about
25 a year.

26 Now, in terms of actual in-

1 creasing that number of potential resource exploiters, we
2 would have to be concerned about the synergetic effect between
3 the two projects. So as I understand your proposals, that
4 your spreads it's the wrong word I suppose in highway construc-
5 tion, your contract would be about eighteen to twenty miles
6 and you would attempt to construct two adjacent units at the
7 same time which would give you something like two hundred
8 men in a camp, something like this?

9 MR. LUKE: Well, they may or
10 may not be both constructed at the same time. Bearing in
11 mind, that a grading job will take two -- we're looking at
12 about two construction seasons to build. That's including
13 the base course and then the paving may not be done for oh,
14 one, two, anywhere up to three years after the fine gravel
15 has been put on.

16 By staggering the start of
17 these jobs, you can have one job finishing up maybe a year,
18 maybe two years ahead of the adjacent job. So that the camp
19 could be there anywhere between three and five years.

20 MR. CHAIRMAN: Okay, in
21 discussion in the last week or so, we got into some of the
22 policies that may limit resource exploitation. We've heard
23 about hiring men in the Yukon and also hiring outsiders
24 outside, rather than having hiring all done in the Yukon for
25 the pipeline. Having these men coming from outside, working
26 in camps, working long days and really not being available

1 for resource exploitation, what sort of policies on hiring of
2 men and really, it's all related to the availability of these
3 men for resource exploitation. Where would you foresee the
4 men coming from? Would they be coming mostly from the
5 south, mostly from the Yukon? You'll obviously be competing
6 with Foothills (Yukon) Limited for men and what sort of
7 policies would likely emerge with regard to camps -- keeping
8 men in camps with appropriate recreation facilities, policies
9 with regard to firearms, this type of thing.

10 Have you any thoughts on what
11 this may be? Are they likely to be different than the
12 policies of Foothills, because they will have a bearing on
13 the interaction between the wildlife and the men?

14 MR. LUKE: I'd like to turn
15 this over to Dick Coates, who has run camps in the Yukon
16 before. Dick?

17 MR. COATES: The Public Works
18 policy would be to hire through Manpower and the contracts
19 call for -- the contracts utilize local labour where it's
20 available. Insofar as the running of the camps, they could
21 be either the responsibility of the contractors or could be
22 government camps leased back to the contractor.

23 The department has discouraged
24 the use of taking of firearms into camps and they see no
25 problem with pursuing that policy, so I wouldn't think we'd
26 be too much different than Foothills. We may not be quite

1 as lavishly equipped with recreational facilities because of
2 the difference in size of camps, but the tendency is to
3 provide some facilities for recreation.

4 MR. CHAIRMAN: Okay now, in
5 terms -- as I understand, there is two types of camps to
6 operate. One is for D.P.W. personnel - the engineering
7 people and as I understand it, the contractors operate their
8 own camps or do you stipulate the terms and conditions of
9 the contractors' camps?

10 MR. COATES: Most of the time,
11 the contractor operates his own camp. He owns and operates
12 it -- he has to have his land use permit to operate the
13 camp, set it up. Of course, they have to meet the industrial
14 norm if they're going to keep people on site.

15 MR. CHAIRMAN: Do you foresee
16 any problems of interaction here between camps in the
17 exploitation of game, a high number of people who wouldn't
18 ordinarily be there, hunting, fishing and so on?

19 MR. COATES: Well, there is
20 bound to be more pressure unless the regulations are
21 modified so that they don't have the right to hunt or you
22 limit the hunting in the area.

23 MR. CHAIRMAN: So you see no
24 control that D.P.W. could legitimately put on the camps in
25 order to limit that?

26 MR. COATES: No, we wouldn't

Mr. Coates
Mr. Bouckhout
Mr. Strileaf

1741

1 be in a position to control that type of activity.

2 MR. CHAIRMAN: Thank you.

3 Any more questions from the panel? Mr. Bouckhout, do you
4 have any comments to make on the interaction with the Shakwak
5 project?

6 MR. BOUCKHOUT: No sir.

7 Nothing than to say that there are implications of the two
8 projects and our means of confronting those implications are
9 to maintain a continuing dialogue between D.P.W. and our-
10 selves. As Mr. Luke has already mentioned, this is not
11 unusual in scheduling highway projects and other projects
12 and we feel that through mutual co-operation and co-ordination,
13 we can confront these problems.

14 MR. CHAIRMAN: Thank you.

15 Other participants, Mr. Romaine?

16 MR. ROMAINE: Yes, Mr. Strileaf
17 and Mr. Surrendi have some questions.

18 MR. CHAIRMAN: Mr. Strileaf?

19 MR. STRILEAF: Yes, my question
20 is for the Department of Public Works. Along the alluvial
21 fans west of Kluane Lake, a deep pipeline trench could tap
22 ground water which in turn could lead to upwelling and icings.
23 Is this of any concern to highway maintenance?

24 MR. LUKE: It depends what
25 side of the road it's on.

26 MR. STRILEAF: If the trench

1 is on the upside from the highway.

2 MR. LUKE: Would you outline
3 the nature of the anticipated problem. I didn't really realize
4 that there was a problem here.

5 MR. STRILEAF: Yes, if you
6 dig a pipeline trench of -- this one would be quite deep
7 because of the -- the pipe will be buried to scour depth
8 across most of the alluvial fans. This then of course, if
9 there is a fair amount of ground wire, this will cause the
10 ground wire to rise to the surface, perhaps during winter
11 months as well, creating icings which could also impose on the
12 highway.

13 I was wondering if this at all
14 has been considered, this possibility happening.

15 MR. LUKE: Well, my under-
16 standing of these alluvial fans that run into the south
17 end of Kluane Lake, are predominantly a very coarse granular
18 type of soil, in which case, the only time you'll see water
19 in there is the few weeks when you have your rapid run-off.
20 After that's gone by, your ground water table has probably
21 disappeared right out of site.

22 MR. STRILEAF: Yes, I don't
23 think there was any information obtained on that at the time,
24 that I know of, but perhaps going fourteen feet deep and so on,
25 maybe you do tap ground wire.

26 The second question is, we've

1 been talking a considerable amount about insulating to retain
2 permafrost regime. I understand the temperature of perma-
3 frost in that area is close to zero degrees centigrade. Does
4 this create any problem as far as insulating is concerned
5 because of the high temperature, relatively high temperature?

6 MR. LUKE: As long as it
7 stays zero, there's no problem. We've done some studies,
8 mostly analytical, to find out how much insulation we need
9 and it appears we need somewhere between three and about
10 three and a half inches of insulation-- well styrofoam, I don't
11 like using trade names, but three and a half inches of styro-
12 foam would fill the bill in there. That way we get practically
13 no change in temperature, more than just a couple of inches
14 underneath the insulation itself.

15 If this insulation was put
16 -- if we're looking at a fill of about six feet high and this
17 insulation was about two feet above the original ground, we
18 can get thawing down to the order of about six inches below
19 that insulation, which is still eighteen inches above the
20 original ground. So this is what our heat flow studies have
21 shown us so far. This has been determined by the National
22 Research Council and was again confirmed very recently for us
23 by Dow Chemical Corporation of Sarnia, Ontario, who are the
24 manufacturers of styrofoam and who are of course, vitally
25 interested in this question as well as we are.

26 MR. STRILEAF: Thank you.

1 MR. CHAIRMAN: Mr. Surrendi?

2 MR. SURRENDI: I have a
3 question and perhaps my second question may be termed as a
4 statement I suppose. The first is to Mr. Luke.

5 Basically, during the dis-
6 cussion, we've heard questions regarding the possible
7 conflict between yourselves and Foothills in sharing
8 granular material. One of the questions that arises to my
9 mind at this point is, where will the rock, removed from
10 the cuts along the Kluane Lake area, be deposited after
11 you get the rough -- after you blast and get it out of
12 there? Have you selected sites or do you have any idea
13 where this will be placed later on?

14 MR. LUKE: Well, it would go
15 into the adjacent fills and in fact, most of it will go
16 into widening out the approach fill to the Slims River
17 Bridge.

18 MR. SURRENDI: I see. That
19 fills the bill for the first one. The second one, I'm not
20 really sure how to phrase it either as a question or a
21 statement and I think it likely should be addressed
22 probably to the panel, although I may stand corrected
23 later on.

24 The statement was made just
25 recently, not by yourself Mr. Luke, but by one of your
26 co-workers down the way, regarding firearms in the D.P.W.

1 camps and the fact that there is a possibility that there
2 would be little manner in which it could be -- the position
3 of these could be controlled in the camps.

4 Recognizing that the Shakwak
5 Project is basically just in its infant stages and that the
6 environmental assessment is not complete and no doubt there
7 will be environmental guidelines and conditions placed on
8 these kinds of things in your operation later on; also
9 recognizing that Foothills will have something like that
10 placed on them sooner or later, do you or does anybody
11 here feel that there may be problems if the two projects
12 are run simultaneously and the camps are operated con-
13 currently that there will be difficulty -- difficulty will
14 arise in achieving compliance if one group is given certain
15 guidelines that are not applicable to the other?

16 This sort of emerged out of
17 this thing because certain conditions did come through on
18 the Mackenzie situation, whereby the Canadian Arctic Gas
19 group indicated that they would not allow firearms in their
20 camps and would place constraints on their personnel as
21 far as going out hunting and that sort of thing.

22 I just wondered how this could
23 be resolved or if it is even seen as a problem. I'm
24 curious about that.

25 MR. CHAIRMAN: Maybe you
26 could -- I think I know what the problem is you're alluding

1 to, but could you define the problem that you see, a little
2 more?

3 MR. SURRENDI: Well, for
4 example, I'll try and use an example Dr. Hill. The
5 situation that arises for example, if the authority having
6 jurisdiction or what have you, comes into one of the camps
7 that's concurrently or that is holding both personnel from
8 Foothills and from D.P.W. The Foothills people are under
9 direction to comply with their stipulations regarding their
10 project and likewise D.P.W. with regard to theirs.

11 If the constraints on those
12 two groups are slightly different and one is allowed to
13 have firearms and the other group is not or if certain
14 constraints are placed on one group regarding hunting
15 privileges and the other group do not have these con-
16 traints and they both look alike, it's going to be difficult
17 for the authority that is administering these rules and
18 regulations to actually you know, enforce them.

19 I just wondered if this had
20 been thought of and if there was -- or in fact, am I
21 making a mountain out of a mole hill.

22 MR. CHAIRMAN: Well, as I
23 understand the situation is, the company may in fact, lay
24 down the rules of the camp, responsibility for enforcing
25 those rules are the companys, not the regulatory agency.

26 The regulatory agency may also

1 lay down rules and I would hope that the rules would be
2 the same for everyone, so you wouldn't have to identify
3 which camp they came from.

4 Possibly, do you have anything
5 further to say on that, either Mr. Luke or Mr. Bouckhout?
6 Basically, they concur then.

7 MR. SURRENDI: Perhaps my
8 concerns are --

9 MR. CHAIRMAN: Mr. Coates
10 would like --

11 MR. COATES: I didn't mean
12 to say that we couldn't control what happened in the
13 camps. I was talking about beyond the perimeter of the
14 camps, we do control the taking in of firearms into our
15 camps and have kept them under lock and key on occasion,
16 if they're allowed to hunt. If they're not allowed to
17 hunt, then they would be discouraged altogether from
18 bringing them into the camps.

19 MR. CHAIRMAN: Yes, the
20 difference in policy as I understand it, is that Foothills,
21 as I understand their policy, wouldn't allow guns in camp
22 at all, whether or not the men were allowed to hunt or
23 not, is that correct?

24 MR. BOUCKHOUT: Yes Dr. Hill,
25 that's correct.

26 MR. CHAIRMAN: And the D.P.W.

1 would allow guns in camp under -- but not for the use of the
2 men in the camp, but they would be stored under lock and
3 key for the men should they wish to go hunting, is that
4 correct?

5 MR. COATES: This has been
6 the past policy. It doesn't mean that we have to remain
7 on that policy if it's the wish of the game people or
8 other people. We can certainly prohibit the guns in the
9 camps.

10 MR. SURRENDI: I expect that
11 my concerns are non-concerns. Perhaps there may be some
12 problems within the camps themselves between the personnel
13 or something that may have to be resolved later, but I
14 guess maybe I might have seen a ghost where there was not
15 one there. Thank you very much.

16 MR. CHAIRMAN: Mr. Romaine?

17 MR. ROMAINE: Mr. Ottway
18 would like to make a comment.

19 MR. CHAIRMAN: Mr. Ottway.

20 MR. OTTWAY: Yes, Mr. Chairman
21 and possibly Mr. Klassen of the Game Branch here, will
22 back this up, but I believe in a standard land use permit
23 that is issued in Yukon Territory right now, there is only
24 one rifle issued per camp and it is under the supervision
25 of the supervisor. I think that's almost a standard clause
26 put in by Game Branch.

Mr. Klassen
Mr. Hernandez
Mr. Luke

1749

1 MR. CHAIRMAN: Mr. Klassen?

2 MR. KLASSEN: Mr. Chairman,
3 one of the stipulations in some of the recently issued land
4 use permits is just that only one firearm will be kept in
5 camp and that will be under the care and supervision of
6 the camp supervisor or whatever his title may be.

7 That, insofar as it is a
8 stipulation under the Land Use Permit, is not written in
9 to the Game Ordinance as yet and we hope to have that as
10 part of the Game Ordinance by 1978 field season.

11 MR. CHAIRMAN: Thank you.

12 Anyone else like to comment? Mr. Hernandez?

13 MR. HERNANDEZ: Yes, I have
14 a few questions. First of all, is it planned to use the
15 existing major bridges such as the Duke, the White, the
16 Donjek or the Slims or will they have to be rebuilt or
17 replaced or whatever?

18 MR. CHAIRMAN: Mr. Luke?

19 MR. LUKE: There will be a
20 major bridge program. There are thirty-three bridges on
21 the Shakwak project. About five of these have been re-
22 built in the last seven or eight years. These will be
23 maintained exactly as they^{are} and the other twenty-eight will
24 undergo varying stages of rehabilitation. There will be
25 some of them which will be replaced.

26 We have an approximate idea

1 of what we're going to do now. A more detailed plan of
2 attack you might say, on the bridges, will be forthcoming
3 after an examination this fall, by bridge engineers
4 from the Department of Public Works in conjunction with the
5 Federal Highway Administration who will then make specific
6 recommendations of what to do with the bridges on the
7 route.

8 It would be a bit premature
9 of me to go into any detail on that right now.

10 MR. HERNANDEZ: Thank you.
11 In general, which would you prefer, that the pipeline be
12 built before or after the highway is rebuilt if you had a
13 choice?

14 MR. LUKE: As long as we're
15 not on top of one another, I don't think it really matters
16 very much.

17 MR. HERNANDEZ: You may not
18 be able to answer this one, but are any major realignments
19 likely now known from the existing highway alignment or is
20 this too early to tell now?

21 MR. LUKE: Well, there are
22 two major alignments that we're going to have a look at.
23 One I can say for sure will be a major alignment consisting
24 of approximately sixteen kilometers and this is at the
25 extreme south end of the Haines Road. Anybody who has
26 travelled down to the customs house, will be familiar with

1 the hairpin bend and the very steep climb. If we're going
2 to build a modern highway, we obviously can't build it in
3 the same location as the existing road. We're forced into
4 a realignment in that area.

5 We have some thoughts at the
6 present time of where we'd like to go. These are only
7 tentative alignments sketched on air photo-mosaics at the
8 present time. We have a lot of survey work to do in there
9 to firm up this line, but that is definitely one where
10 there will be a realignment.

11 MR. HERNANDEZ: Finally, apart
12 from tight spots such as Sheep Mountain, will the highway
13 right-of-way be widened from the present one? In other
14 words, is additional clearing needed for where the right-
15 of-way will follow the existing one?

16 MR. LUKE: Well, the present
17 highway I think -- Dick, is three hundred feet? I'm not
18 sure whether the present highway has been cleared out to
19 that width in all places. I don't think it has.

20 For the most part, we will
21 try and put our new road within the existing right-of-way,
22 wherever it's possible to get the grades and the alignment
23 for a high standard modern highway, we will stay within
24 the present alignment.

25 MR. HERNANDEZ: Thank you.

26 MR. CHAIRMAN: Panel staff?

1 Dr. Beanlands?

2 DR. BEANLANDS: Mr. Luke, I
3 take it from your comments in general, you don't foresee any
4 serious problems in conflicts between the two major programs
5 the Shakwak Project and the running of the forty-eight
6 inch line. Is that a fair assumption?

7 MR. LUKE: I think it's a
8 fair assumption. I believe that the Foothills Pipeline
9 and ourselves if we work closely together, we can solve
10 our problems.

11 DR. BEANLANDS: Would you say
12 that your conclusion is based on a close working relation-
13 ship with Foothills up to now or -- well, how would you
14 define your working relationship with Foothills?

15 MR. LUKE: Well, we haven't
16 worked very closely. I only met them about a month ago
17 and this is only the second time I've met them, but I
18 think from now on, we'll be working very closely together.
19 The Shakwak Project is now in the process of setting up
20 a project headquarters in Vancouver where it will be for
21 approximately the next twelve months and I expect we will
22 be getting in touch with Foothills on many occasions in the
23 next twelve months.

24 DR. BEANLANDS: So your
25 conclusion is really based on a couple of meetings with
26 Foothills, is that fair?

1 MR. LUKE: Right.

2 DR. BEANLANDS: Well, perhaps
3 you might be able to help me out a bit because I've got a
4 problem. I understand you're going to run the highway
5 in a leapfrog fashion with each frog doing a different
6 operation.

7 I also understand from Mr.
8 Bouckhout that it's normal in a pipelining operation to
9 start at some point and keep it going, except for a crew
10 which may handle separate bridge crossings. Do you not
11 see that as causing some problems since you're operating
12 principally under different modes?

13 MR. LUKE: Well, they're two
14 different types of projects. Letting out a highway in a
15 series of segments to different contractors has been
16 standard practice since the middle of the last century.
17 C.P.R. was built like that and --

18 DR. BEANLANDS: Well, I'm
19 not --

20 MR. LUKE: -- the Alaska
21 Highway south of Fort Nelson, we're doing exactly the same
22 thing there.

23 DR. BEANLANDS: I'm not
24 questioning the methods to build a highway or a pipeline.
25 I'm just wondering whether or not the two methods of
26 operating are not going to cause problems, since Foothills

1 has indicated on numerous occasions at hearings, that indeed
2 the Alaska Highway is going to be their major access to
3 the pipelining activities.

4 MR. LUKE: We'll continue to
5 do so because we will maintain traffic at all times during
6 construction. This is something we've done in the past and
7 we're well equipped to do this.

8 DR. BEANLANDS: Another
9 question. With regard to the settling of the highway,
10 perhaps you can clarify it for me. I understand that on
11 the extreme western end of the highway - Beaver Creek area -
12 that every three to four years and I'm sure that probably
13 the Yukon Territorial Government will answer this since
14 they're now in charge of the maintenance, but every three
15 to four years, it's a process of building up the road bed
16 say in the order of a foot or so. That has continued
17 right up to the present time.

18 In other words, far more than
19 seven to eight years and I'm wondering, is that a -- as
20 my understanding correct on that, that the road bed has
21 been subsiding in the Beaver Creek area ever since it's
22 been built?

23 MR. CHAIRMAN: Would Mr.
24 Campion like to tackle that one?

25 MR. CAMPION: I've been
26 involved in highway maintenance on the Alaska Highway since

1 '72 and we know that this problem has been with us since
2 then. As a matter of fact, I'm taking off early in the
3 morning to see what can be done about a problem we're
4 having up there right now.

5 I can't answer you whether
6 the road is subsiding or whether the water is coming in,
7 but the water has been over the road in places.

8 DR. BEANLANDS: Is it not
9 true that in the order of every three to four years, you
10 undertake a buildup of the road bed in that general area?

11 MR. CAMPION: Not as a general
12 program. We do our normal re-servicing on a three to four
13 year program sort of thing. We have got in some of the
14 lower areas there, we had ^{a crew} to bring in / last year to build
15 up the grade a distance of about four to five hundred yards,
16 but this was an exception, rather than a rule.

17 DR. BEANLANDS: A final
18 question with regard to aggregate sources. Would not the
19 highway require a different sort of aggregate than the
20 pipeline. I'm thinking of your requirements for, I believe
21 you call it binder, which probably the pipeline people
22 would not want as bidding material.

23 What I'm asking you basically,
24 is would you be able to operate out of the same pits or
25 would you both have to operate pits independently to meet
26 your specific aggregate requirements?

Mr. Luke
Dr. Beanlands

1756

MR. LUKE: I'm sure we can work out of the same pits. The binder that you refer to has been common practice to put binder in gravel on a gravel road to knit the surface together.

Now, when you're building a highway to-- well, roughly Trans Canada Highway standards, you try and keep that binder out of there and use a graded aggregate of a two inch maximum size up to a certain depth, three quarter inch size up to a little further depth, and then you tie this off on top with a hot mix asphalt which is standard procedure and then your traffic travels on that asphalt.

This provides a very stable platform. It's the asphalt really which then prevents the unraveling of the surface so you don't need binder in the gravel base forces underneath. You know, it's not a skip graded aggregate either. It's a well graded aggregate where each successive is a smaller size in the aggregate, fills the spaces in the size just above it, so that when you compact this, you get a very dense mass. But the amount that passes -- well, the number two hundred as I said for instance, is in the order of eight per cent or less, so it's not frost susceptible.

DR. BEANLANDS: One final short question. What portion if any of the construction for the Shakwak Project can you undertake in the winter-

1 time? Can you give--keep operating in the winter on any aspects?

2 MR. LUKE: Well, you can keep
3 working in a granular type soil if you're building fill
4 out of a -- if you're lucky to have a large granular
5 borrow source. You can work at that right until long after
6 freeze-up. What usually bogs you down, is the snow. As
7 soon as you're up to your armpits in snow, everything
8 shuts down.

9 You can hammer away at rock
10 cuts far into the winter, until it's just too cold to run
11 machines or it's too cold for people to stand around
12 tending these machines or once again, the snow is too
13 deep to get out and tend these machines. So there is two
14 types of construction. The third that you could do in
15 winter is bridge construction and this is quite commonly
16 done, where you build a housing over your pier, and you
17 work inside a heated housing. It's expensive but it can
18 be done. You're buying time really when you do that.

19 MR. CHAIRMAN: Any other
20 questions from staff? Dr. Schilder?

21 DR. SCHILDER: Mr. Chairman,
22 I have a question for Mr. Luke. During the previous period
23 of hearings, an interest has been raised in the crossing
24 of rivers, especially major rivers. My question would be,
25 could some of the existing bridges according to your
26 opinion, be used for pipeline crossings? At the same time,

1 I would take the liberty to ask, could any of the new
2 bridges which you mentioned in your program, could any of
3 the new bridges be used for pipeline crossing?

4 This is a general question
5 I understand, but this question in my opinion, has for me,
6 some value, especially in connection with other potential
7 routes which the panel certainly wishes also to certain
8 depth, examine.

9 MR. LUKE: Actually, as I
10 see it, there are two questions here. One, when we build
11 a new bridge, we will remove the old bridge. It will be
12 taken entirely and hopefully some of the through trusses,
13 the steel trusses, we can dismantle these, they can be
14 used elsewhere. I'm quite sure the YTG can put them to
15 good use somewhere.

16 As far as hanging the pipe
17 on the bridges, this is probably one of the technical
18 details which the pipelines and ourselves will address in
19 the near future.

20 MR. CHAIRMAN: Maybe I could
21 clarify this thought. We talked about windows and these
22 windows are environmental windows to do with river
23 crossings. The situation may exist in some rivers where
24 in fact there is no really appropriate time to construct
25 a pipeline under a river, that different species of fish
26 will be spawning at different times or they'll be running

1 or whatever. So that the question if I would have asked it,
2 would also be general because we don't know yet whether or
3 not there are any specific problems which would warrant
4 requesting Foothills to look at an aerial crossing.

5 So that the problem will
6 arise later on, a year from now possibly, when enough data
7 is in on fisheries to determine whether or not there is a
8 real need for aerial crossings. So that in answering the
9 question, it's really also one of timing in terms of your
10 design and your construction related with timing of design
11 and construction of the proposed Foothills project.

12 So do you see any problems
13 associated with the timing of this design and timing of the
14 construction to facilitate the movement of gas via bridges
15 that you're associated with?

16 MR. LUKE: Well, to date,
17 I have had no advance warning that the pipeline people want
18 to put a pipeline on the bridges.

19 MR. CHAIRMAN: They don't.
20 Let me assure you.

21 MR. LUKE: Well if they
22 don't, that's fine with me. Then I'm free to schedule
23 the bridge construction without constraints.

24 MR. CHAIRMAN: No, I mean,
25 it's Foothills' policy not to put pipelines on bridges
26 because that's an inconvenience and a cost to them, but

1 the stipulation would be developed if in fact, there was
2 no window in order -- could be developed if there was no
3 window to put the pipeline in the ground beneath the
4 river in the river bed.

5 So it's a matter of co-
6 ordination I would expect if it should arise.

7 Dr. Schilder?

8 DR. SCHILDER: Thank you Mr.
9 Chairman for the additional information. Perhaps I
10 should also learn from the previous problem. I have a
11 question for Mr. Luke and in order to be properly under-
12 stood, I'll take the liberty to introduce you to the
13 problem which I have in mind.

14 The Foothills Pipeline
15 Limited have a construction schedule on the first one
16 hundred and eleven miles which calls for winter construc-
17 tion. There are three segments, two presently are present
18 for winter 1980 and one for winter 1981 / ^{within} that reach,
19 which is basically the reach between the U.S.A. Alaska
20 boundary and the Kluane Lake, there has been identified a
21 need for a number of snow roads.

22 The area as it has been
23 pointed out, is in general, rather poor in precipitation
24 and the annual precipitation or annual snow depth in
25 average as recorded at snag, has indicated roughly eight
26 inches. My question would be, what is the experience of

1 D.P.W. from the operation of the highway within that reach
2 concerning snow removal? Would it be possible to use the
3 snow removal from the highway as a source - an additional
4 source of building snow roads?

5 MR. CAMPION: I've never run
6 into a winter trail or, I assume you're talking about,
7 having to haul snow, but you can usually even in the low
8 precipitation areas, you can usually grade in enough snow
9 from the sides to fill holes from potholes and so forth.

10 DR. SCHILDER: Well, I
11 didn't want to indicate that we don't know how to do it,
12 but I wanted to ask you whether there would be a possibility
13 to use at the same time, some snow which might be available
14 at certain points on the highway as an additional source
15 of snowfall, safe and easy building of snow roads.

16 Nevertheless, this is a
17 marginal question. If you cannot elaborate on that
18 immediately.

19 MR. CAMPION: No, I'm sorry,
20 I can't answer that question, there's a possibility.

21 DR. SCHILDER: Mr. Chairman,
22 I have only a small marginal final question. I happened
23 to have an opportunity to look over one study that has been
24 prepared by the Department of Public Works, Development
25 Engineering Branch. It's dated March, 1966. It's
26 entitled "Engineering Study, Alaska Highway - Canadian

1 Section".

2 I quote from page 88, one
3 paragraph as follows:

4 "Degradation of permafrost causes settlement
5 and rolling of the grade line after construc-
6 tion. It is expected that the highway in con-
7 tinuous permafrost locations can never be
8 properly stabilized and that satisfactory
9 surfaces will be difficult to obtain."

10 As Dr. Hill and Dr. Hughes
11 indicated, the panel had a number of discussions on perma-
12 frost. Certainly, the D.P.W. has been in a good position
13 to have probably the most unique experience from operating
14 the highway since the Alaska Highway has been the oldest
15 highway built through permafrost regions.

16 My question would be, do you
17 feel that these statements still holds water or is the
18 existing opinion different from the statement read?

19 MR. LUKE: That statement was
20 made about eleven, twelve years ago.

21 DR. SCHILDER: That's right.

22 MR. LUKE: We've come a
23 fair distance from that in technology. Also, economics
24 has played a fair bit to do with this too. In those
25 days, earth was moved for prices something like twenty-
26 five to thirty-five cents per cubic yard. Today, you're

1 looking at a dollar seventy-five to two and a quarter.

2 So if you can use a design
3 today which uses less fill, then you can save yourself
4 a fair bit of money in earth moving costs. Now, the
5 volume of earth moving is almost proportional to the square
6 of the height of the fill. In other words, if you go from
7 four feet up to eight feet, you don't double the amount
8 of fill. It goes up as four times the amount of fill and
9 also the cost of insulating materials has decreased in the
10 same time. So we're now in a position where we can look
11 at techniques that were economically not possible ten to
12 twelve years ago.

13 So to take a statement out of
14 an old, you might say, out of an old textbook, it's no
15 longer valid.

16 DR. SCHILDER: Thank you
17 very much.

18 MR. CHAIRMAN: Mr. Lister?

19 MR. LISTER: I have a
20 question for Mr. Luke. It follows from an earlier question
21 from Mr. Wykes concerning borrow materials.

22 I'm interested in your
23 possible requirements for gravel. Could you place an
24 order of magnitude estimate on that at this time?

25 MR. LUKE: No, I don't know.

26 MR. LISTER: Would it be ten

1 million cubic yards or one million?

2 MR. LUKE: I really don't
3 know at the present time.

4 MR. LISTER: We're just
5 interested in the magnitude relative to that that may be
6 required by Foothills in that same area.

7 MR. LUKE: We require a great
8 deal more than the pipeline.

9 MR. LISTER: Have you con-
10 sidered the possibility of requiring gravel from in-
11 stream sources, flood plains?

12 MR. LUKE: Well, within
13 environmental constraints, we'll take gravel from anywhere
14 we can get it. We're not proud on that part.

15 MR. LISTER: So at this
16 stage of your planning, you're not in a position to say
17 whether you need to go into flood plains, either active
18 or inactive at this point?

19 MR. LUKE: Well, with the
20 fear of sounding facetious, we'll go anywhere to get
21 gravel until we're told not to.

22 MR. LISTER: Thank you.

23 MR. CHAIRMAN: Dr. Lacate?

24 DR. LACATE: Mr. Chairmar,
25 I still think there are, at least in mind, I'm not
26 convinced that there are conflicts between timing between

Dr. Lacate
Mr. Luke
Mr. Bouckhout

1765

1 the two projects, but I'll take one example and perhaps
2 both Mr. Luke or Mr. Bouckhout can address it.

3 It's my understanding that if
4 a forty-eight inch gas pipeline is in place, this places
5 severe restrictions on any future construction activity
6 nearby. For example, blasting. Now, I think we've solved
7 the Sheep Mountain one in terms of timing because you have
8 said you would rather have the highway in first and then
9 the pipeline after.

10 MR. LUKE: Right.

11 DR. LACATE: Now, what
12 happens elsewhere, because a pipeline project could be
13 say a two or three year thing, where the Shawkak is a ten
14 year. So how many times are you going to run into a
15 pipeline being in place and you want to do some blasting
16 there?

17 MR. LUKE: All right. Well,
18 first of all, I'd like to ask a question. Is the pipeline
19 going to be open or is it going to be buried?

20 DR. LACATE: It will be
21 buried. From previous testimony or somebody mentioned
22 from our first hearings, some N.E.B. regulations I
23 believe, that no blasting can take place within two hundred
24 yards or three hundred yards. Perhaps someone can clarify
25 this.

26 MR. BOUCKHOUT: I'm not aware

1 of that regulation. I will check it for you. The primary
2 regulation of course, as we've already mentioned, is that
3 we must have heavy wall pipe when we are within the highway
4 right-of-way.

5 With respect to blasting,
6 we'll look up Z184 which is the pipeline code and get that
7 answer for you right away.

8 MR. LUKE: The other thing
9 is that we do encounter rock all along the job. There
10 are specific locations where we do encounter rock and
11 where the pipeline is within you might say, fly distance
12 of rock, we will in consultation with Pipelines, we'll
13 see if we can get either the berm increase its size or
14 we'll go into rubber mats. Rubber mats over their pipeline
15 or over our rock cuts, but we'll take precaution to cut
16 the fly rock down.

17 But this is something that
18 can be worked out between pipeline and ourselves.

19 DR. LACATE: I think this
20 would be a scheduling problem though that might -- you
21 may have to do all your highway stuff - any blasting or
22 difficult areas, line them all up for the ten year period
23 and get them done within a two or three year period.
24 You know, there might be hundred yard stretches here,
25 hundred yard stretches there where future heavy construc-
26 tion around a pipeline might not be possible. I hope that

1 they keep this in mind.

2 MR. LUKE: Can you imagine
3 the cost of doing that?

4 DR. LACATE: Well, I assume
5 these projects are being synchronized.

6 MR. CHAIRMAN: Maybe we can
7 get that information at a little later date. Are there any
8 more comments, questions from the panel? No, I have one
9 question before we ask Mr. Luke to sum up and that is, it's
10 a responsibility question.

11 As I understand the situation
12 in the Yukon on the Alaska Highway, the Yukon Territorial
13 Government is responsible for maintenance of the highway
14 and the D.P.W. would be responsible for any major re-
15 construction, is that correct - outside of the Shakwak
16 Project? I know that D.P.W. is responsible for construc-
17 tion of the Shakwak, but I'm wondering about other parts
18 of the highway, other than where the Shakwak Project is?

19 MR. COATES: That's correct
20 for the time being anyway. The Territorial Government does
21 the maintenance; D.P.W. has still the responsibility for
22 reconstruction.

23 MR. CHAIRMAN: Fine. That
24 has a bearing on our next subject, so could I ask the
25 responsible people from D.P.W. to stay around for the
26 discussion of the next subject which is on Alaska Highway

1 relocation? Okay fine, thank you.

2 Would you like to sum up on
3 the Shakwak Project now Mr. Luke?

4 MR. LUKE: In what aspect?

5 MR. CHAIRMAN: Well, anything
6 you'd like to say in sum. If you have nothing to say,
7 that's fine.

8 MR. LUKE: No, really I think
9 it's all been said here.

10 MR. CHAIRMAN: Fine, thank
11 you. Okay, could we then ask Dr. Schilder to read in the
12 next topic?

13 DR. SCHILDER: Yes, Mr.
14 Chairman. I will read now the rest of the statement
15 prepared by the panel for today.

16 Alaska Highway Relocation.
17 The Department of Public Works has been authorized to
18 implement reconstruction and paving the Alaska Highway
19 from Mile 865 to 940 before the end of 1979. This year
20 construction is a schedule between Mile 865 to 883.
21 Preliminary studies are underway for implements between
22 Mile 626 to 630 near Yukon/B.C. border and Mile 637 to
23 649 up to the junction to Cassiar, with construction
24 expected to commence in 1979.

25 Future highway improvements
26 between Teslin and Mile 865 are presently scheduled beyond

1 1980. Some of the proposed changes along the Alaska
2 Highway could both affect the proposed pipeline project and
3 conflict with land use principles.

4 MR. CHAIRMAN: Thank you.

5 If I may, could I broaden that just a bit since we have
6 advisers here from the Yukon Territorial Government Highways.
7 I'd like to also ask some questions about the use --
8 maintenance and use of the highway at the time pipeline
9 construction will be going on, other than these mileages
10 that have been delineated here.

11 So could I ask someone first
12 of all, from either Public Works or the Yukon Territorial
13 Government, knowing its -- you know, close liaison takes
14 place, about any concerns they might have related to the
15 construction or reconstruction of the Alaska Highway in
16 relation to the construction of a pipeline close to the
17 highway. Mr. Coates?

18 MR. COATES: Is this a
19 specific area you're thinking in terms of?

20 MR. CHAIRMAN: Well, do you
21 have this piece of paper where the mileages are laid out?
22 I can give it to you if you wish.

23 MR. COATES: No, I just
24 copied the ones down that were listed.

25 MR. CHAIRMAN: Yes, those
26 are the specific areas, yes.

1 MR. COATES: No, as far as
2 I know it, the Foothills Pipe Lines in the 649 area, leaves
3 the highway and goes in south of the Liard River drainage
4 and basically, 626, 230 is east of Watson Lake and the
5 pipeline is well away from the highway in that area.

6 I should mention that although
7 we're doing studies for highway relocation in that area and
8 in the 800's, 804 Teslin area, we have no authority to any
9 construction as yet. It's in preparation of presentation
10 of a new program, continuing the present one we have in the
11 Yukon. We have no authority to do any work as yet.

12 865 to 818 is well under
13 construction now so that of course, is no concern with the
14 pipeline. 924 to 940 will fall in much the same category.
15 Our work will be advanced before the pipeline is there, so
16 I see no problems.

17 MR. CHAIRMAN: Following up
18 on Dr. Lacate's question, where we've heard before, that
19 when there is a pipeline placed in the ground, the pipeline
20 company at least, would like to keep people away from it
21 as much as possible so therefore, there is a certain amount
22 of constraint placed on land use adjacent to a pipeline.
23 Of course, reconstruction of the Alaska Highway, when and
24 if it should take place right along it, would parallel the
25 existed -- the pipeline which would then be existing,
26 should it be built.

1 How would you foresee these
2 problems and how would you foresee resolving any potential
3 problems as the pipeline is being planned?

4 MR. COATES: Well, I would
5 suggest that when the pipeline is close to the highway,
6 they will have to work on the permit themselves and say,
7 a crossing in an area where we're not contemplating a
8 relocation at this particular time, we would have to look
9 at it in answer to an application from them for a crossing.

10 This would bring it to the
11 four if we have to consider something special. After the
12 pipeline is in, if we have design problems, then we'd just
13 have to overcome them.

14 MR. CHAIRMAN: You see then
15 no possibility of planning in harness so to speak, in the
16 two projects?

17 MR. COATES: No, I can't see
18 where the highway could be programmed say between here and
19 Watson Lake to fit in with the Foothills pipeline. It
20 would be too much of a major project for our department
21 at this time.

22 MR. CHAIRMAN: I understand.
23 Mr. Chambers?

24 MR. CHAMBERS: I think just
25 following that question. There seems to be a fairly
26 narrow corridor between Teslin Lake and where you get into

1 rock. You know, within that corridor, there is alignment
2 for a pipeline and even though you haven't got it scheduled,
3 I think we all fully appreciate that at some point in time,
4 the Alaska Highway will probably be reconstructed along
5 Teslin Lake.

6 It occurs in other places
7 along there also and it would seem to me that somewhere
8 we're going to run into difficulty if the pipeline criteria,
9 say extra heavy pipe under highways, you don't know your
10 scheduling or your planning and we could have heavy pipe
11 under the existing highway, but then have the highway
12 realigned in which the pipeline then is not meeting the
13 specific criteria or specifications for it.

14 MR. COATES: I'd like to just
15 quote an example of what ^{has} happened south of Fort Nelson.
16 We've crossed ^{their} Westcoast Transmission's pipeline in three
17 locations with our new highway. The pipeline company
18 came in and rebuilt the crossing prior to our construction
19 and we were able to carry on with our normal highway
20 procedures.

21 That seems to me, that the
22 only problem would be blasting. You mentioned Teslin Lake
23 and I'm not aware of any rock of any consequence along
24 Teslin Lake that bothers us on the highway. Maybe Mr.
25 Champion could confirm that.

26 MR. CHAIRMAN: Nevertheless,

1 we have heard of constraints that certainly the pipeline
2 company would like to put on in keeping highways or anything
3 else away from their pipeline and their pipeline right-of-
4 way. I don't believe the problem I was thinking of was
5 so much of crossing the road, but of paralleling -- the
6 road paralleling a pipeline, having to parallel a pipeline
7 because of constraints on horizontal curvature or vertical
8 curvature or whatever.

9 The question really is related
10 to, is there anything that can be done to minimize this
11 conflict now, knowing that probably the pipeline will be
12 -- or the highway will be reconstructed. As I understand
13 your answer, no, it would be a major job to undertake such
14 a study.

15 MR. COATES: Well, we'd have
16 to talk to Foothills' people on this, but if it's only a
17 few local areas, then yes, you could maybe arrange some-
18 thing at this time, work together with them so that you
19 could solve your problem at the same time that they're
20 solving theirs. But not on a massive scale.

21 Maybe I should ask Foothills
22 if they envision many areas where they are encroaching
23 that closely on the highway.

24 MR. CHAIRMAN: Well, it's not the
25 existing highway. It's the future highway of course.

26 MR. COATES: Well, even here,

1 they, I'm sure, have a copy of our 1966 report which would
2 indicate potential relocations and I'm sure that they would
3 bring these to our attention, at least we would hope so.

4 MR. CHAIRMAN: Does Foothills
5 have any comment on this issue?

6 MR. BOUCKHOUT: No specific
7 comment regarding that topic, Dr. Hill, with the highway
8 relocation. I really can't see where there would be any
9 major conflicts. If it were highway crossings, as Mr.
10 Coates has already mentioned, those are reacted to as very
11 site-specific details and some redesign or re-installation
12 is required in those cases.

13 The only case where I could
14 see any remote possibility of major implications would be
15 in such a situation where the pipeline happened to be
16 located and operational over an extended length in the
17 only suitable location for a highway. I really doubt that
18 something in that order would really be the case.

19 MR. CHAIRMAN: Yes, well,
20 you know, in looking at a corridor as one gets into tight
21 spots and of course the example that was just discussed
22 the Sheep Mountain any linear facility transmission
23 line or whatever, is competing for the same area. If the
24 area is already occupied, then the competition is -- there
25 are restrictions.

26 That's a situation I am --

1 not concerned about, but asking questions about.

2 MR. BOUCKHOUT: Yes, sir, I
3 can see that point. It's a matter of, the closer the two
4 are together, the more liable there are to be conflicts.

5 MR. CHAIRMAN: Now, we've
6 heard about double -- or not double, but extra thickness
7 pipe - thick wall pipe close to highways and running
8 parallel to a highway, how close would one have to come in
9 order to require heavier thickness pipe?

10 MR. BOUCKHOUT: As I recall,
11 the requirement is to run heavy wall pipe when the pipeline
12 is within the right-of-way of the highway. We could check
13 on that. We'll check on that. The additional use of
14 heavy wall pipe of course, ^{is} /for river crossings those are
15 the two major uses. We'll have to look at the code to see
16 if there is a precise distance or whether in fact, it is
17 just a general statement like that.

18 MR. CHAIRMAN: Thank you.
19 Any more questions from the panel? Mr. Wykes?

20 MR. WYKES: I'd just like to
21 ask Mr. Coates whether or not, in view of the 1966 report
22 which I gather identifies possible major relocations or
23 relocations of a certain magnitude on the highway, does
24 that go all the way from say the existing part that's not
25 under the Shakwak Project from Watson Lake or from the
26 Dawson Creek I presume, perhaps right through to Haines

1 Junction?

2 MR. COATES: Yes, it could
3 cover the full length of the highway with some major
4 alternates that would be imposed on us by the Liard River
5 Power Project.

6 MR. WYKES: In view of that
7 report, have you -- has D.P.W. looked at the existing or
8 the proposed routing to see if in fact, there are any
9 areas where there might be competition for a small corridor
10 of land?

11 MR. COATES: Not up to this
12 time, no.

13 MR. WYKES: Can I ask Mr.
14 Bouckhout whether or not they have looked at that report
15 in terms of their proposed alignment?

16 MR. BOUCKHOUT: Sorry, Mr.
17 Wykes, would you give me the title of that report again?

18 MR. WYKES: I'm not familiar
19 with the report myself. Mr. Coates, the title of that
20 report is --

21 MR. COATES: It's an engineer-
22 ing study on the Alaska Highway done in 1966.

23 MR. BOUCKHOUT: I'm not
24 personally familiar with it. It's possible that our
25 geotechnical people are, but we're not personally familiar
26 with it here.

1 MR. CHAIRMAN: Well, you're
2 aware of it now anyway, if they're not. Any more questions
3 from the panel?

4 Would it be fair to ask a
5 question of Mr. Campion on any conflicts he would see be-
6 tween the operation and maintenance of the highway and the
7 construction of the pipeline?

8 MR. CAMPION: We have looked
9 at this problem and have got together with the pipeline
10 people as far back as almost a year ago. Of course, one
11 of our first concerns from the highway maintenance point
12 of view, what impacts the pipeline is going to have, that's
13 regarding traffic and axle loads.

14 We have come to the conclusion
15 that it's no problem as far as highway maintenance is
16 concerned. During the Alyeska pipeline construction at the
17 peak periods of '74, '75, we had increases up to eighty
18 per cent on the Haines Road and parts of the Alaska Highway
19 at certain times of the year and we were able to cope with
20 it. We hope to be able to cope with this because I don't
21 believe -- I haven't got the figures here, but I don't
22 believe the traffic that will be generated, will be any-
23 where near what went over during the Alyeska.

24 MR. CHAIRMAN: Are there any
25 -- have you looked at the impact on the user of the highway
26 - obviously you have experience on the western side with

1 regard to the Alyeska pipeline, on the user of the highway,
2 the tourists or any other users, any inconvenience, any
3 dust - any special dust problems or whatever that occur at
4 times when there is heavy road traffic like that?

5 MR. CAMPION: There shouldn't
6 be. If the pipeline goes down the Alaska Highway, we'd do
7 a complete dust control from the B.C./Yukon border right
8 through to the Yukon/Alaska border at 1221.

9 MR. CHAMBERS: Just a follow-
10 up question Mr. Campion. You were saying that your feeling
11 is that there wouldn't be the traffic generated on the
12 highway that there was on the Alyeska project, but I would
13 take it that the United States will probably have a similar
14 requirement that they had on the Alyeska. The pipe will
15 still move up, mainly by the Alaska Highway and through
16 Haines like it did for the building of the Alyeska which
17 put a certainly increased traffic load on the system.
18 There'll be just not the Yukon portion of the system that
19 is creating traffic, but also the Alaska portion of the
20 system that will create additional traffic will it not?

21 MR. CAMPION: I feel that
22 this is a possibility, but at the present time, we don't
23 know what traffic is going to be generated by the pipeline
24 on the Alaska side.

25 MR. CHAIRMAN: Mr. Romaine.
26 have you any comments, advice to give?

Mr. Surrendi
Mr. Coates
Mr. Hernandez

1779

1 MR. ROMAIN: I believe Mr.
2 Surrendi has a question.

3 MR. SURRENDI: In view of the
4 tremendous loads of fill that will be used for the highway
5 and I'm led to believe after listening to Mr. Luke, that
6 it will be considerably more in any area of the highway
7 than along the pipeline.

8 Does D.P.W. have any prescribed
9 method of handling their borrow sites after they've
10 completed using them? In other words, how do D.P.W.
11 propose to deal with borrow areas when they are finished
12 using them? Are they going to revegetate, contour, et
13 cetera, or is this done now? Do you have a prescribed
14 means of handling these now?

15 MR. COATES: In our contract,
16 we are now designing the borrow pits and they'll be left
17 with stable back-slopes or stable slopes and we are also
18 looking more and more into landscaping the material,
19 grassing the slopes. We would expect that we would do this
20 on all our new projects.

21 MR. SURRENDI: Thank you.

22 MR. CHAIRMAN: Mr. Hernandez,
23 do you have anything to add?

24 MR. HERNANDEZ: I just have
25 a short question about a possible tight spot. Last week,
26 we talked about the possible re-alignment along Squanga

1 Lake and I was wondering if there is any potential re-
2 alignment to the highway between Jakes Corners and
3 Squanga Lake, because that's a pretty narrow valley. I was
4 wondering if there was information available.

5 MR. COATES: Along that
6 stretch from Jakes Corner down to Johnsons Crossing, the
7 proposal would be fairly close to what is the line of the
8 telegraph - the YTG did do a little bit of reconstruction
9 at Johnsons Crossing hill and also at Squanga Lake hill on
10 the south side or east side. But it wouldn't be very major,
11 it would be mostly easing the curves, except maybe along
12 the side hill where there's a bit of more straightening,
13 but it's more or less along the telephone line.

14 MR. HERNANDEZ: Thank you.
15 That's all.

16 MR. CHAIRMAN: Panel staff,
17 do you have any questions? Mr. Bouckhout, do you wish to --
18 no, Mr. Bouckhout please.

19 MR. BOUCKHOUT: Just on an
20 earlier matter, Dr. Hill, regarding heavy wall pipe for
21 highway rights-of-way. In the C.S.A. standards, Z184, 1975,
22 Page 101, Clause Number 6.4.1.2.2, states that a design
23 factor of 0.60 or less shall be used in the design formula.
24 In Clause 6.4.1.1. for steel pipe in class one locations
25 / ^{that} and sub-point (b) states crosses without a casing or has
26 a parallel alignment on the right-of-way of either a hard

1 surface road, a highway or a public street. So I gather
2 it is within or on the right-of-way rather than a specific
3 distance.

4 MR. CHAIRMAN: So the right-
5 of-way in this case is three hundred feet, as I understand
6 it?

7 MR. COATES: That's right.
8 It's three hundred feet full width.

9 MR. CHAIRMAN: Thank you.
10 Dr. Schilder?

11 DR. SCHILDER: Mr. Chairman,
12 I have a question for the representatives from the D.P.W.
13 During the two days hearing, we had an opportunity to hear
14 some estimates from the representatives from the N.C.P.C.
15 concerning the power requirements. My question would be,
16 could your experts make any evaluation or could you put
17 any figure on increased operation and maintenance costs
18 on the Alaska Highway in the Yukon because of increased
19 traffic generated by the proposed pipeline project?

20 MR. COATES: I think we'll
21 have to pass on that question.

22 DR. SCHILDER: Thank you.

23 MR. CHAIRMAN: Mr. Lister?

24 MR. LISTER: Mr. Coates, in
25 response to an earlier question by Mr. Hernandez, you
26 mentioned that you envision some relocation of

1 the highway between Jakes Corner and Johnsons Crossing,
2 following the telephone line was it?

3 MR. COATES: Yes, generally
4 speaking, the telephone line was put on what they call the
5 bureau of public roads relocation, the U.S. engineer did before
6 they turned the highway over to Canada. Since it was a
7 very nice cleared right-of-way or cleared line, they put
8 the power line on it or the telephone line, so very often,
9 we want to go back to the same spot.

10 MR. LISTER: The alignment
11 map or at least the alignment of the proposed pipeline shown
12 in the Environmental Atlas published by Foothills, indicates
13 that around Little Teslin Lake between there and Johnsons
14 Crossing near the Squanga Lake area that was mentioned
15 earlier, the pipeline deviates from the highway and
16 follows a line there - it may be a telephone line or a
17 power line, but it's the line that comes up from Jakes Corner,
18 so I presume that it's probably a telephone line.

19 So in that case, they may be
20 in fact, trying to use the same corridor you're going to
21 be using, are you aware of that?

22 MR. COATES: No, the line I
23 saw was the one that went in behind the mountain, behind
24 Jakes Corner. I don't know if they changed their mind to
25 go down the --

26 MR. LISTER: This is after it

1 comes out past Squanga Lake and crosses the highway just
2 south of Little Teslin Lake and then pursues to the south
3 of Little Teslin Lake to the south of the highway.

4 MR. CHAIRMAN: Mr. Bouckhout,
5 possibly you could confirm that that T-shaped line that's
6 shown on the map is in fact, an existing telegraph or
7 telephone line?

8 MR. BOUCKHOUT: Yes sir, our
9 alignment found in the photo-mosaic alignment sheets in the
10 vicinity of Milepost 330 to 334, after the crossing of the
11 Alaska Highway heading east, our alignment is shown just
12 south of the existing C.N.T. pole line.

13 MR. CHAIRMAN: Thank you.

14 MR. COATES: I don't think
15 in that area, that we would go that far astray from our
16 present highway. There's nothing confining and the location
17 of our present highway is not all that bad. It's a minor
18 east curving and it would be satisfactory.

19 MR. LISTER: Thank you very
20 much. The reason I mentioned it was that on Friday, we
21 heard an expression of concern regarding the unique white
22 fish population in that lake and it concerned me as well,
23 that perhaps there were maybe two projects envisioned that
24 would create new rights-of-way through that area. Thank
25 you.

26 MR. CHAIRMAN:: Any more

1 questions? Any questions from the floor? Mr. Bouckhout,
2 do you have anything to add to the discussion on any
3 conflicts with either the relocation of the Alaska Highway
4 or maintenance of the Alaska Highway?

5 MR. BOUCKHOUT: No sir, I
6 don't.

7 MR. CHAIRMAN: Thank you.
8 Would you like to say anything in summation Mr. Coates?

9 MR. COATES: No, I don't have
10 any more to say, except that obviously, co-operation is
11 going to be essential from all parties in dealing with
12 the highway.

13 I don't foresee any great
14 problems in achieving that end.

15 MR. CHAIRMAN: Okay, thank
16 you. Before I close the session for this afternoon, I
17 would like to announce that I've heard two requests to be
18 heard on other issues. One from Mr. Templeton. He has
19 two issues he would like to address us on and Mr. Romaine,
20 you have two issues that you would like to bring up.

21 So we'll reconvene at 7:00
22 o'clock with the other issues portion on the proposed route
23 along the Alaska Highway and tomorrow we will start dis-
24 cussing alternatives. Thank you very much for attending
25 Mr. Johnson, Mr. Coates, Mr. Campion.

26 (PROCEEDINGS ADJOURNED).

1 (PROCEEDINGS RESUMED PURSUANT TO ADJOURNMENT).

2 MR. CHAIRMAN: Could we
3 please come to order. This is the last day the panel will
4 be discussing the proposed route along the Alaska Highway
5 and to wrap things up, we are discussing other issues, that
6 is, other issues that our advisers, our participants would
7 like to advise us on but we haven't scheduled and I under-
8 stand there are two participants would like to address us,
9 Mr. Carson Templeton and Mr. Romaine. Who would like to go
10 first? Mr. Templeton, would you like to address us?

11 MR. TEMPLETON: Mr. Chairman
12 and panel members, this is to do with the controls of the
13 project and I think to date, you have been talking about
14 what could be done and of course, if it isn't done, it
15 isn't the protection of the environment that you're talking
16 about is not going to be achieved.

17 We feel that there is two
18 main participants in this, is the applicant and the govern-
19 ment or regulatory body and I'd like to discuss that
20 tonight. I'd like to discuss what I feel is needed to
21 achieve environment protection in a project of this
22 magnitude. I wish to urge that one of your recommendations
23 be for the immediate establishment of a single regulatory
24 agency to develop and enforce the numerous environmental
25 protection measures which have been discussed and proposed
26 at these and other hearings of Northern Gas Pipelines for

1 the past three years.

2 The establishment of such an
3 agency is urgent and I notice the National Energy Board and
4 the Yukon Territorial Government agrees it would require
5 extensive planning and preparation to be in place and
6 ready to respond to the applicant's proposed final design.
7 Much discussion and work has taken place regarding the need
8 for establishing a single overall regulatory agency to
9 achieve environment protection on a proposed northern
10 pipeline.

11 In September, '74, the
12 Environment Protection Board published its four volume
13 impact assessment of the proposed Mackenzie Valley gas
14 pipeline and volume two of that report was entitled
15 "Towards an Environmental Code" and I wish to submit it to
16 these hearings. I think Mr. Hernandez has already given
17 it to you.

18 This volume spells out the
19 duties and responsibilities of both the applicant and the
20 government as well as the environmental protection
21 measures that would have to be met by the applicant and
22 enforced by the government. In April '76, the Environmental
23 Protection Service published a study entitled "Assessment
24 of Environmental Protection Activities on the Mackenzie
25 Valley Gas Pipeline Project". I would now like to submit
26 this document to these hearings if you haven't already

1 got it.

2 This document spells out the
3 level of effort and the timing required to set up the
4 type of agency required in the Environment Protection
5 Board's report. Later in 1976, and early this year, the
6 Environment Protection Service published "Recommended
7 Environmental Standards for the Design and Construction
8 of the Mackenzie Valley Gas Pipeline", and a new volume of,
9 "Guidelines of Good Conduct for Pipeline Construction in
10 General".

11 These reports were both
12 referred to by the interveners from E.P.S. last week and
13 I presume both documents have been submitted to these
14 hearings. Both of these reports by themselves, however,
15 are not sufficient to achieve environment protection.

16 Firstly, they are guidelines
17 and not mandatory requirements to be met. Second, they
18 do not spell out the requirements and the duties of the
19 government regulatory agency needed to enforce them. I
20 understand that an interdepartmental committee is working
21 on these aspects but it still has not been clearly stated
22 that the government will set up the necessary single
23 controlling agency.

24 In the opinion of the Alaska
25 Highway Pipeline Panel, if the government is not ready to
26 control the pipeline, the pipeline should not be built.

1 Our studies of this pipeline proposal point out the need
2 for specific well thought out and well understood controls
3 applied at the right time. They also make it clear that
4 the preparation and timing of the government effort is all
5 important.

6 Any operation, where thousands
7 of men along with their support equipment, must be moved
8 into position, obviously takes considerable organization
9 and planning. Let us compare the logistics of building a
10 pipeline in the North with the logistics of landing the
11 allied forces on the beaches of Normandy. The Normandy
12 Landing was planned not only from the viewpoint of the
13 air ground and sea forces that would actually perform the
14 operation, but also from the viewpoint of the general
15 staff appointed by the countries mounting the effort.

16 Preparations back in the
17 home countries, decisions to be made as to the landing
18 progressed, how far to go before consolidation of the
19 positions and the political national issues, all had to be
20 anticipated and the alternatives formulated long before
21 the operation proceeded.

22 No one would have expected
23 the general staff to wait until the landing took place to
24 become prepared. Yet some seem to think that the govern-
25 ment forces and control of this project should be set in
26 motion only when the project is approved. The government

1 forces are an integral part of a pipeline construction and
2 operation, as well as the general staff and the landing at
3 Normandy. A well trained, discipline organization is as
4 necessary for the government regulatory forces for this
5 project as it was for the general staff of the allied forces.

6 Each country has its own hopes,
7 aspirations and staff. Similarly, in this case, each of
8 at least three government departments has its own hopes,
9 aspirations and staff. Each probably would like to appoint
10 the supreme commander, certainly one is needed, just as
11 planning is needed. A trained discipline force is needed
12 to control this project in the North, but it simply does
13 not occur over night.

14 In addition to the Territorial
15 Government, three departments of jurisdiction over this
16 project - the Department of Indian and Northern Affairs,
17 the Department of Environment, the Department of Energy
18 Mines and Resources and the National Energy Board. Each has
19 partial jurisdiction and responsibilities and each has
20 staff and expertise that is unique and necessary to control
21 the project.

22 No matter to whom I talk to
23 in government, they all agreed that a single agency was
24 required, but each person I felt, assumed that his depart-
25 ment would supply the agency. It would be unfortunate if
26 this decision resulted from bureaucratic maneuvering rather

1 than a well thought-out plan. The government needs to
2 make a political decision now, that if a pipeline is
3 approved, a single agency is required. Decision is also
4 needed as to whom the agency will report and what role the
5 department will be required to play in supporting it.

6 I think these decisions could
7 well take from six months to a year. Now, I would like to
8 discuss the next stage of setting up the agency, the process
9 of securing senior management people who will direct the
10 agency.

11 Obviously, these people are
12 fully employed elsewhere, so that there could be a time lag
13 of from two to six months in getting them even seconded to
14 the agency. Then would follow a period of securing senior
15 technical people in a variety of disciplines. These people
16 too will have full-time jobs elsewhere and to get them
17 seconded, will take another two to six months. That's the
18 second level I was talking about.

19 Then, both groups would be
20 needed -- would need time to become familiar with the
21 mountains of paperwork that have been generated for these
22 hearings, to say nothing of the technical reference
23 materials that will be required.

24 After this break-in period,
25 the agency people would need time to undertake the
26 necessary interdisciplinary work on the problem of control,

1 how performance was to be measured and what was acceptable
2 and what was not acceptable. An adequate code or regulation
3 regardless of what it is called, will be needed very early
4 in the project, before the applicant makes its initial
5 basic decisions which will govern future operations and
6 procedures.

7 Just to show you how long
8 these things can take, the first meeting of the Canadian
9 Standards Association Committee on gas pipeline code Z184
10 in Canada, started in 1963 and it was not until 1972 that
11 I felt that the code that I had worked on and we had
12 prepared was in good enough shape that we could recommend
13 it to the Province of Manitoba that it be adopted there.

14 Undoubtedly, there are those
15 who will argue that the government already has land use
16 regulations and land use inspectors, game officers,
17 fisheries personnel and others. We agree, but we would
18 like to point out that the present regulations were drafted
19 basically to control smaller activities which run into a
20 few of the environmental problems associated with a major
21 effort such as this pipeline.

22 I am referring to the problem
23 such as summer operations which include apart from the
24 pipeline itself, construction, operation, stockpile areas,
25 access roads, quarries compressor stations, to mention only
26 a few.

1 One must also remember that it
2 took two years to draft the land use regulations and put
3 them into effect. The reason I stress the urgency of
4 setting up the agency is that it must be able to respond
5 almost immediately when a permit is granted to some very
6 basic and fundamental decisions.

7 As in any large project, the
8 basic logic that goes into the critical path chart which
9 plots the time needed for each activity, including decision-
10 making, must be made at the outset. In planning any con-
11 struction operation, the senior management always knows
12 that they must be able to make the most basic of decisions
13 in the first few months of the project. After these are
14 made, the most critical construction operations as to the
15 time available to perform the operation, show up and the
16 decisions are reviewed to see if alternative methods or
17 equipment can ease the time required for the critical
18 activities.

19 Delivery dates of two years
20 from the date of ordering are common. Thus, in the first
21 few months following approval, we can expect the applicant
22 will be making numerous major decisions which could have
23 substantial implications for the environmental impact
24 of the project. They will have to make a decision when
25 the start-up date for each spread will be and also the
26 close-down date.

1 The twenty-five hundred men
2 that field the applicant, cannot turn the operation on or
3 off with changes of weather. Construction activities are
4 so large and so concentrated that they can be compared with
5 the Lions Gate Bridge in Vancouver in the evening rush
6 hour. All roads from the West End converge into two lanes
7 on the bridge and when an accident puts a stopper on that
8 funnel, the physical, social and business reverberations
9 do not settle down for many hours.

10 So it will be with the con-
11 struction activities. If something stops at the head end,
12 the reverberations will be felt all over Canada and people
13 and materials will be stockpiled all over the place. I
14 have dwelt at length on this one example, but I really
15 wanted to emphasize two points having to do with control
16 of the project.

17 The first has to do with the
18 timing of the basic decisions on the critical path chart,
19 type of equipment, type of tractor treads, type of fuel
20 location, air strips, fuel caches, wharves, number of men,
21 pieces of equipment needed for each spread to perform the
22 allocated work in a specific number of days.

23 All of these decisions will
24 have to be made at the earliest possible date by the
25 pipeline company so that the equipment can be ordered and
26 all of these decisions have environmental implications.

1 If the government agency wants to approve, veto or alter
2 these decisions, it must be ready and trained by the time
3 the approval of the pipeline is given.

4 The second point about the
5 Lions Gate Bridge funnel example is the problem of shutting
6 a job down by an agency inspector if the pipeline company
7 does not do things properly. The right to shut a job down
8 as a means of enforcing a decision by an inspector, is a
9 usual method of enforcement, but the problems of doing so
10 at the job end of this funnel, may cause more environmental
11 damage than perhaps he was trying to prevent.

12 My experience shows that if
13 the do's and the don'ts of a construction job are clearly
14 written and understood by both the inspectors and the con-
15 tractors and the inspection staff are well trained and
16 authoritative and able to apply financial penalties if
17 necessary, the need to shut a job down becomes rare.

18 However, to reach this state
19 of control, requires detailed specifications to be admin-
20 istered by a trained staff. This takes time and brings me
21 back to the conclusion earlier, that there is some urgency
22 in getting on with the job of setting up the agency,
23 allocating people and getting familiar with decisions that
24 will be required if the project is approved.

25 I would like to see the
26 government administration demonstrate its intentions at

1 hearings in the same way that the applicant has demonstrated
2 its intentions. When this is done, you would have much
3 better confidence that the impacts predicted -- confidence
4 in the impact predictions and could spell out more clearly,
5 the terms and conditions as are appropriate, having regard
6 to the social, environmental and economic impact of the
7 construction, operation and abandonment of the proposed
8 pipeline.

9 This brings me around to the
10 subject of how one finds out what the bureaucracy is
11 planning to do. I think I demonstrated earlier that I have
12 trouble with that, and I think that since we are talking about
13 environmental impacts, it is just as important to know
14 what the government will do, as to know what the applicant
15 will do to establish and enforce environmental controls.

16 We hold this view very strongly
17 because we see the actions of both government and the
18 applicant as variables and one must try to eliminate as
19 many variables as possible so that the remaining variables
20 are more easily determined. The Environment Protection
21 Board asked a series of questions of government at the
22 Berger Inquiry which it would like to see answered. To
23 my knowledge, they have not been answered and we would like
24 to ask them again. Here they are.

25 First, what authority does
26 the various departments of government, talking about Federal

1 Government as well as Territorial Government, have to
2 control this project in the Yukon? Will a single agency
3 of government be set up to control the project and if so,
4 how long will it take to establish this agency?

5 Three, has a specific role
6 been defined for the various departments regarding the
7 inspection and control of the project in order to limit
8 environmental damage and what are these roles?

9 What staffing and organizational
10 mechanisms is planned?

11 Five, can the Cabinet transfer
12 authority under a number of acts from various departments
13 to a different department or agency on a one project basis?
14 I note the National Energy Board did say that, that they
15 could in their report.

16 Number six, would legislation
17 be necessary to establish a new agency with authority to
18 formulate regulations as a performance code?

19 Seven, does the agency or
20 department have sufficient power to prosecute individual
21 infractions and if necessary, order a cessation of offending
22 operations?

23 Eight, how long would it take
24 the Federal Government to set up a single agency to control
25 this project by establishing a new authority?

26 Nine, would an environmental

1 code be established for this project and will it be enforced
2 by trained personnel?

3 Ten, how long will it take
4 to draft a view and finally approve an environmental code
5 covering such matters?

6 Eleven, is long range land use
7 planning in the territories, the responsibility of the
8 Department of Indian and Northern Affairs or is it the
9 Territorial Governments, and I guess that was probably
10 answered yesterday by the Commissioner. He said in effect
11 it was both.

12 Twelve, what progress has
13 been made with this in the past two years and what effort
14 is currently being expended on this project in this regard?

15 Dr. Hill, the next section
16 from Page 8 on, has to do with the probable schedule of
17 activities for the Foothills pipeline project and I think
18 probably, it would be -- I can present it tonight, but I
19 wonder if -- I know you're short of time and working hard,
20 and I wonder if it wouldn't be more useful if we left it
21 with you and come back at another time and answer questions,
22 rather than try to go through it and present it. I can go
23 through it if you like.

24 MR. CHAIRMAN: I don't know
25 when we could get back to it Mr. Templeton. That's my
26 problem. Certainly the timing is always a problem in

1 environmental assessments and timing of this project is no
2 exception and we'd certainly like your thoughts on the
3 timing I believe, of construction and operation and how
4 soon it would take to get the pipeline into operation,
5 consistent with your thoughts on the environmental pro-
6 tection.

7 So, I think we should carry on
8 your and hear/ thoughts of what has to happen in sequence.

9 MR. TEMPLETON: All right.
10 On Page 8, this is the probable schedule. I believe
11 that the job of this Inquiry is to recommend whether a
12 route within the Alaska Highway corridor and by that I
13 mean, the Alaska Highway corridor is sufficiently wide
14 in width to include the Dawson/Klondike loop, can be made
15 to be environmentally acceptable.

16 The Alaska Highway Pipeline
17 Panel concluded that such a route could be found, provided
18 that there was time to plan it, the time, money, staff and
19 the will to manage it by both the applicant and the
20 government. We have heard about the applicant's plans and
21 we recognize the application is in a preliminary stage, but
22 we've not heard about the government's plans on how it
23 will manage its efforts in this project.

24 We have tried to work out a
25 realistic schedule for setting up the much needed control-
26 ling agency to achieve environment protection on this

1 project and I'd like to submit it to these hearings. I
2 realize that Mr. Doyle will be -- who is really the author
3 of it, will be here on Wednesday, but he's not here tonight.
4 I'll do the best I can.

5 The overall logic is, I'm
6 familiar with. Some of the details I might have a little
7 difficulty. In summary, the construction schedule proposed
8 by Foothills must be preceded by a number of activities.
9 Studies will be required of a route through Dawson and
10 along the Dempster Highway as a result of the N.E.B.
11 decision.

12 Other activities include
13 corporate organizing and planning work, the arrangement
14 of project financing, firming up gas contracts, labour
15 negotiations and lead time to acquire equipment and
16 materials will precede the construction schedule filed by
17 Foothills.

18 Assuming that government
19 concurs with the Berger and the N.E.B. recommendation to
20 approve a southern Yukon pipeline for transmission of
21 Alaskan gas, a number of activities will follow, such as
22 the formal E.A.R.P. process and socio-economic impact
23 assessments. N.E.B. hearings and approval will also be
24 ongoing before route and stipulations can be
25 followed by the pipeline company and finalized.

26 A considerable body of infor-

1 mation exists to guide the finalization of physical and
2 biological environmental controls for the project, but
3 little has been yet done for the socio-economic controls.
4 Thus, a ten month process is envisaged to:

5 (a) gain agreement on the
6 problems requiring control action,

7 (b) devise solutions to
8 these problems, and

9 (c) integrate the solutions
10 into a consistent stipulations document,

11 (d) develop the most suitable
12 implementation mechanism.

13 This should be completed
14 before the socio-economic assessment and hearings are
15 complete and before any agency prepares the actual stipu-
16 lations to be adhered to by the pipeline company. The
17 ramifications of the scheduling activities indicated above
18 and in figure one to the native claims issue, are that
19 seventeen months should exist for preparing an agreement
20 in principle before any route is approved. An additional
21 thirty-six months should be made available for establishing
22 a final agreement and implementation program before main-
23 line construction with its large influx of workers is
24 allowed to commence.

25 By mainline construction,
26 we're talking about pipelining as separate from clearing

1 and ancillary things which would go on before that time,
2 and which might probably have a positive impact on the
3 Yukon rather than negative. But the negative impacts will
4 start mainly when the influx of pipeline workers and all
5 the camp followers that come with them.

6 The presentation of the
7 Alaska Highway Pipeline Panel, the Lysyk Hearings, gave
8 rise to the question of what would be required to set up
9 an agency charged with controlling the social and economic
10 effects of a northern pipeline. Earlier work has examined
11 this question for other environmental matters, namely
12 physical and biological considerations and in the chart
13 that goes with it, we have tried to put them all together
14 because you're going to be faced with meshing your consider-
15 ations with those of the social and regional economics.

16 Another question arose at the
17 hearings with regard to timing of the project approvals
18 and how this could affect the native claims issue. The
19 National Energy Board decision which was released last
20 week, add some urgency to these questions. Thus, we
21 endeavour to set down a probable schedule of project
22 activities which would allow these to be addressed.

23 To go through that schedule,
24 is shown in Figure 1 and it's broken down into company
25 activities and regulatory activities and I've forgotten
26 what the other one - the native claims or socio-economic

1 controls and native claims.

2 Based on the construction
3 schedule in the Foothills' forty-eight inch application,
4 which is their figure 9A-15.1, we established the pre-
5 construction and the construction activities shown on this
6 Figure 1 which is in front of you. Namely, activities
7 ten to fifteen inclusive.

8 For these activities to occur,
9 they must be preceded by the preparation of specifications
10 or tender documents. Then, tendering evaluation of bids,
11 then contract awards would follow. We've estimated six
12 months for this which is activity number nine. Material
13 delivery to the Yukon, namely pipe which is activity eight,
14 would have to commence before pipeline construction which
15 is activity fourteen, could get underway.

16 Thus allowing for specification
17 preparation, the tendering process, manufacturing and
18 shipping, this activity should commence twenty-one months
19 prior to the required delivery date. Similarly, equipment
20 acquisition, activity seven, has been estimated. Labour
21 negotiations and manpower planning which is activity six,
22 should be complete before activities ten and eleven
23 commence. We've estimated nine months for this activity.

24 I think those of you who have
25 looked at the problems of the Alyeska pipeline, recognize
26 that hopefully it would be a little more successful than

1 it was there.

2 Six months would be required
3 to put together the corporate organization necessary to
4 manage a project of this scale. Fifteen months could be
5 required to arrange all financing and twelve months to
6 finalize gas contracts. I should point out that Mr. Blair
7 this afternoon, disagrees with those figures, saying they
8 are too long.

9 Figure 1 provides six months
10 slack preceding these activities as a contingency because
11 there are a great many factors beyond the control of the
12 pipeline company that could alter the subsequent schedule,
13 because the pipeline company has to go to the National
14 Energy Board and probably others and possibly regulatory
15 organizations in the States.

16 The N.E.B. decision requires
17 Foothills to study socio, economic, environmental and
18 engineering aspects of the Dawson route. We believe this
19 will have two phases. First, at the general level in
20 order to allow for a route decision and subsequently in
21 more detail, to resolve specific problems. This is shown
22 as activity one.

23 The N.E.B. also requires
24 Foothills to submit an application for a Mackenzie Delta
25 line via the Dempster Highway by mid 1979. In making that
26 decision, the N.E.B. has recognized that exploration

1 success in the Delta could in the meantime, make a Mackenzie
2 Valley line viable for Delta gas. It appears in an appli-
3 cation before mid 1979, would make available information
4 that would be most useful to those making the final route
5 decision for the movement of Alaskan gas.

6 With regard to regulatory
7 activities, we examined the company activities by working
8 backwards from pipeline construction, but one must also
9 work forward in the case of regulatory activities.
10 Activities seventeen and nineteen are the Hill and the
11 Lysyk Hearings. The terms of reference of both, state
12 that final and formal hearings will be held, should the
13 government approve the southern Yukon corridor as recommen-
14 ded by Justice Berger in the N.E.B. in their reports.

15 Activities eighteen and
16 twenty provide twelve months for the full socio-economic
17 impact statement and a formal E.A.R.P. process, together
18 with further public input through hearings. An evaluation
19 of alternate routes and a comparative analysis - number
20 twenty-one- would be essential input before completion of
21 eighteen and twenty in view of the N.E.B. report.

22 Project control can be viewed
23 as consisting of four components - traditional N.E.B.
24 controls, environmental controls, socio and economic
25 controls and a form of public auditing of the controlled
26 process. The N.E.B. control requirements are shown in

1 sixteen. This process is well established and does not
2 warrant discussion here.

3 Concerning environmental
4 controls, a study of the key activities for an agency
5 to control environmental impacts of a northern pipeline
6 is identified as a six phased approach. These are shown
7 as activities twenty-two to twenty-seven inclusive. Again
8 in reverse order, the field inspection twenty-six, must
9 commence just prior to the pipeline pre-construction
10 activities, ten and eleven, and will continue through pipe-
11 line and station construction, testing and start-up.

12 If field inspection is to be
13 meaningful, it must be preceded by a review and approval
14 of plans and schedules, number twenty-five, in advance of
15 any field activity to ensure compliance of plans, et cetera
16 for the terms and conditions of permits or licences.
17 However, for these reviews to occur, the pipeline company
18 must have all the rules of the game, number twenty-four,
19 laid out sufficiently beforehand so that the company
20 documentation can reflect the requirements of the stipu-
21 lations. Thus, nine months has been estimated as being
22 sufficient to draw together the required stipulations and
23 to work out the detailed procedures with the company.

24 Also, this activity should
25 best commence following completion of eighteen and twenty.
26 Activities twenty-two and twenty-three reflect the

1 essential organizational steps in forming any new agency
2 on a single project basis.

3 With regard to social and
4 economic controls, very little work has been done, although
5 considerable work has been done for physical and biological
6 requirements of the CAGPL and Maple Leaf projects. Also,
7 various guidelines, codes and recommendations have been made
8 but again, generally related to the physical and biological
9 environment. It thus appears that a good basis exists for
10 a guide to formulating stipulations or code for the Foot-
11 hills (Yukon) project.

12 Site-specific requirements
13 can only be finalized following route approval. Socio-
14 economic environment, however, has no such basis to draw
15 upon in the formulation of controls or stipulations. Thus,
16 a considerable effort will be needed to develop controls
17 for the project, therefore, the schedule of activity
18 provides for this effort through activities eighteen to
19 thirty-one.

20 I think we have referred here
21 in the social economic as controls all the way and I think
22 it was the easy way for us to refer to it, but I think
23 we're really talking about planning. You can't control
24 the social economic activities like you can control a
25 pipeline company when you're dealing with people over which
26 you have no real control, both southern Canadians and

1 northerners. It's much more difficult and requires con-
2 siderably different techniques and I think in subsequent
3 materials, we've been using the word planning rather than
4 controls. You just can't control people in the same way.

5 In examining what would be
6 involved in activities twenty-eight, thirty-one inclusive,
7 we recognize that the Lysyk Hearings have identified many
8 of the social and regional economic problem areas, however,
9 there is no consensus on these problems and what to one
10 group is perceived as a problem, to the other is a benefit.
11 e.g. consumers versus retailers when a rising demand for
12 goods causes price escalation.

13 We believe that an effort
14 must be made to come to an agreement between interest
15 groups and what the problems are that require action and
16 hence, twenty-eight. Devising solutions to problems in the
17 socio-economic area, twenty-nine, is difficult, and in many
18 instances, many government agencies and interest groups are
19 involved.

20 For example, the public health
21 and safety problem area requires input from the Department
22 of Health and Social Services, D.I.A.N.D., Mental Health
23 Association, RCMP, Territorial Government, Municipal
24 Government and a pipeline company. Solutions to antici-
25 pated employment problems and benefits require the input
26 of native groups, Department of Manpower, D.I.A.N.D.,

1 Territorial Government, Chambers of Commerce, pipeline
2 company and the unions.

3 Provision of five months for
4 this activity may be viewed by some to be optimistic.
5 After devising solutions to different problems, it is then
6 necessary to integrate all of the solutions, number thirty,
7 so that the control requirements while solving one problem,
8 do not aggravate another problem.

9 This is a complex but
10 essential undertaking. Next, a mechanism to implement
11 these solutions is required, number thirty-one, and this
12 activity should be completed for presentation to the
13 hearings, numbers eighteen and twenty, and as an input to
14 twenty-four. Because activities twenty-eight through thirty
15 have not been completed, it is not possible to state
16 whether or not the social and economic control function
17 should be fully incorporated into a single project agency.

18 It could be that the pipeline
19 problems would have to be handled differently than those
20 in the physical and biological environment. I think
21 yesterday, the Commissioner of the Yukon made a pretty
22 strong pitch that should be all of them put into one
23 agency and I think that a number have come to a different
24 conclusion. I think I have, that the planning is a local
25 function and the regulatory function normally associated
26 with a pipeline to do with the environmental and engineering

1 aspects, is a technical problem, that where the local
2 people wouldn't have perhaps enough leverage on it to be
3 able to make themselves felt.

4 So for example, I think the
5 woman in Burwash Landing that got up and told how she had
6 problems when she was a girl with the highway being built
7 and that now she had daughters and she was concerned. I
8 think it was a very real concern now, would she have
9 enough -- would she be able to speak loudly enough to dint
10 this agency who is so busy administering a pipeline and
11 with billions of dollars involved and all the problems
12 that go with it. So it's this whole planning agency or
13 this planning aspect and we called it in some places, a
14 project control board.

15 What it's called, I think
16 it's a planning board that the local people are involved
17 in so that they can understand what the impacts are, to
18 plan for them ahead of time and react to them.

19 Then we say that we would
20 like to see the agency and an auditor arm scrutinize the
21 effectiveness of the control process. I think it's usual
22 in the regulatory process that the regulatory agency and
23 the pipeline company or the company being regulated, get
24 together and agree on what should be done and they get
25 pretty friendly over the time I think. Some of them fight
26 a little bit, but they sometimes forget some of the major

1 things that are left outside, particularly at the social
2 field. So you would want to have some kind of an audit to
3 say, is this pipeline and the agency that's going to control
4 it, are they really doing the job they were set out to do
5 and are they doing what they said they would do.

6 With regard to native claims
7 and I must admit that we're not knowledgeable about this
8 but it's one of the most important things in any scheduling.
9 So we couldn't afford to not refer to it, so what we have
10 done was try to use the evidence that Mr. Naysmith gave at
11 the Lysyk Hearings as to the planning process --I don't
12 know whether he'd call it that or not, but -- how he sees
13 the native claims settlement and implementation.

14 Before addressing the native
15 claims topic, it is worth drawing together the ramifications
16 of the foregoing material on the timing of the various
17 approvals. The Berger, N.E.B., Lysyk and Hill Hearings
18 will be in the government's hands by August the 1st, '77
19 which is year one on the chart.

20 Therefore, one can anticipate
21 an approval in principle of the corridor, an applicant by
22 September the 1st, '77. At least I'm assuming, I guess
23 in all of these things, that we're talking about a
24 corridor and many people are talking about a route. I am
25 not sure, reading the N.E.B. report, is what it is they
26 are talking about because they're saying they gave a route

1 which sounds -- reads to me like an order, but they also
2 say they'll make impact assessments and the impact assess-
3 ments -- what's the use in making an impact assessment if
4 you can't change the route? So I think the Energy Board
5 can, from one section of their report, change the route, so
6 I've chosen to call what they're doing or what they have
7 approved as a corridor wide enough to include Dawson in it
8 and that we're then faced with the problem of trying to
9 figure out the best route within that corridor.

10 So, this is what we keep
11 talking about - a corridor and we're talking about
12 possibly the government's approval in principle, of a
13 corridor and an applicant by September the 1st, '77.
14 Assuming that Foothills (Yukon) project is selected, then
15 because of the requirement for activities one, sixteen,
16 eighteen and twenty, it appears that an approval in principle
17 of route which is A2, could not be made until the end of
18 year two.

19 Following through the
20 schedule, an approval of preliminary designs, sites for
21 facilities, locations of camps, et cetera, would commence
22 on October of year four, which is A3. Actual approval
23 of the pipeline construction or insulation need not
24 commence until early of May 6.

25 Following from the above
26 approval, timing and taking into account of evidence at the

1 Lysyk Hearings, it appears that the required twelve to
2 eighteen months would be available to establish agreement
3 in principle on native claims, number thirty-four, before
4 any route was approved.

5 Furthermore, an additional
6 three years would be available to achieve final agreement
7 and partial implementation before the mainline construction
8 would commence. I should point out that while I was over
9 here this afternoon, Mr. Blair who was testifying at the
10 Lysyk Hearings, said that if it required as long as we said,
11 that he felt that it was going to put the whole project in
12 jeopardy.

13 I didn't hear what he said,
14 but when someboy whispered it to me and I cross-examined
15 him a little bit on it, but he has serious concerns about
16 the appearance to the United States about whether to approve
17 a route if it's left that long. I pointed out to him that
18 the Federal Power Commission in commenting on the El Paso
19 approval, said that it would take six and a half years to
20 two years for -- sorry, I'll change that. It said it
21 would take two years for the design and four and a half
22 years for the construction of the El Paso project.

23 That would put you to the
24 equivalent of the end of year eight which is about four
25 months later than this that we have shown. That was for
26 the work in Alaska. Now, I don't believe they have to have

1 an impact assessment in Alaska, but they do for any
2 facilities of the gas plant in California. This is quite
3 time-consuming in California. So when we tried to work
4 these out, both the Alaska and the California situation,
5 would seem to us that it would still be about a six
6 months longer period than we have shown here.

7 But Mr. Blair felt that that
8 wasn't enough, that he wanted a good year or he felt that
9 the Congress just wouldn't approve this route and he was
10 willing to give a little - another year I think, on the
11 schedule that had been submitted. But he would like us to
12 cut a year off ours, so that's where the matter ended. He
13 felt very strongly that Congress might not go with it.

14 So Dr. Hill, I submit this
15 to you and if I can answer any questions, I'd be glad to.

16 MR. CHAIRMAN: Well, thank
17 you very much. No doubt, there will be quite a few
18 questions. I have one to start off maybe.

19 How many of the activities
20 were controlled by the activities of the pipeline company
21 in your scheduling and how many were controlled by the
22 needs - anticipated needs of the regulatory agency?

23 MR. TEMPLETON: You couldn't
24 ask an easier question to start with could you? I'll try
25 and answer it.

26 Well, in the first, if you

1 look in the company activities, the company has on lines
2 one and two, has some very very stringent activities to try
3 and get at the Dawson Diversion and the Dempster appli-
4 cation which is required by the National Energy Board.

5 I guess in the regulatory
6 activities, is the same -- you're faced with the same
7 problems and coming together at the same time. That
8 doesn't answer your numbers question.

9 MR. CHAIRMAN: Yes, in just
10 looking at it, I felt that the, including the assumptions
11 you made in drawing the black lines, that that is the
12 company activities, that all of the activities were cor-
13 trolled by the company activities.

14 In other words, with your
15 basic assumptions that there would have be be a preliminary
16 look at the Dawson Diversion, plus a final design phase
17 and the six month slack required to get things operational,
18 then everything else seemed to be phased in on a critical
19 path, dictated by construction activities, by the planning
20 and construction activities?

21 MR. TEMPLETON: Yes, that's
22 probably -- that's mainly true. What we did really, I
23 suppose, is take the construction schedule or -- I don't
24 believe it's all the construction schedule, because I think
25 we backed up some of these other things beyond what was
26 submitted in the construction schedule, and then fitted the

1 regulatory activities to that.

2 MR. CHAIRMAN: Then I would
3 have a question for Foothills. Given you're at, according
4 to the schedule, the end of 1978, in other words, you have
5 approval in principle for a route, is the schedule from
6 then on, a realistic schedule?

7 MR. BOUCKHOUT: Well I think,
8 Dr. Hill, what this schedule appears to contemplate, is
9 many things mutually exclusive or many activities mutually
10 exclusive, which we would not necessarily view them as
11 such. In other words, the schedule if I can search out an
12 example or two here, the Dawson Diversion studies and design
13 being completed by January of 1980, we don't begin any
14 construction under number fourteen until summer of 1982.

15 In other words, there appears
16 there to be a period of two and a half years between the
17 completion of design and beginning of construction. Now,
18 I know another final design - final engineering and design
19 at point twelve, but that additionally starts almost a year
20 after I suspect, what may be construed in number one as
21 preliminary design.

22 There is no reason in my
23 mind why some final design on certain aspects of the
24 project need to wait in fact, any time at all. In fact,
25 they can probably be done in the same time period as some
26 of the other preliminary design is being completed.

1 In other words, what I'm saying
2 is, these things are really stretched out, whereas we view
3 them more as overlapping in many instances.

4 MR. TEMPLETON: Well, I think
5 you have to have your route. You see, it looks to me that
6 you have the route around Dawson, and Dawson to Whitehorse
7 and as they've been making a very strong pitch over in the
8 Lysyk Hearings today and yesterday, it shouldn't go that
9 way, it should go to Watson Lake, bypass the whole area.
10 Sooner or later, somebody's going to say well, we've got to
11 look at that and you've got to decide your route. You've
12 got a concern around the Ibex River area here. You've got
13 a concern -- still a concern I think around Kluane Lake.

14 The possibility, if you
15 consider a corridor of an oil line to follow and I realize
16 you don't want an oil line but pipeline guidelines has to
17 conflict that. So there's a lot of work to be done and I
18 doubt if you're going to be doing much detailed design
19 when you're trying to figure out your route because this
20 is a pretty compressed, if you look at those activities
21 where you're selecting your route, it's a pretty compressed
22 time frame, unless you're willing to design all of those
23 routes as you go and I doubt if you are.

24 MR. BOUCKHOUT: Well, I don't
25 know that -- this is one thing that's bothered me somewhat.
26 In discussing some of these kinds of things, I just don't

1 quite understand why this particular project, given the
2 good access, given the nature of the terrain, given the
3 use of conventional construction techniques in most cases,
4 with which we have experience, that this route and the
5 design process is looked upon as so dramatically different
6 than the way we construct pipelines conventionally in the
7 south.

8 We do recognize of course,
9 that there are some differences. We are dealing with more
10 permafrost. In some instances, we may be dealing with less
11 data than is available in the south, although I don't
12 think that's necessarily the case in all instances. I'm
13 sure there are many pipelines built in Northern Alberta
14 and Northern British Columbia for which there is no more
15 data than we currently have for much of the line which
16 we're talking about here in the Yukon.

17 I find it very difficult to
18 accept why this is viewed as being so dramatically
19 different just because perhaps, there is an imaginary
20 line at 60 degrees north.

21 MR. TEMPLETON: Well, I
22 think that's a valid point, but I think there are two
23 things in it. The first is that you're speaking of
24 conventional pipelining in the past and I think that the
25 Pipeline Act gave the pipeline company virtually the
26 powers of expropriation. It could go wherever it wanted

1 and had to pay compensation all right, but this is producing
2 some serious questions in many jurisdictions now.

3 I don't think that you're
4 going to be allowed to get away with that here. Maybe I
5 shouldn't say get away with it. I think that time has
6 changed and it's not going to occur here. This has been
7 open to a lot of public scrutiny and I'm sure will continue.

8 I think that there is quite a
9 design problem in north of Whitehorse.

10 MR. BOUCKHOUT: Well, I'm
11 really not so sure that there is. Certainly there are
12 implications, however, I'm not convinced that they are
13 unique implications that have never been dealt with before.
14 As I say, we do recognize that there are certain aspects
15 of the project which are different. Obviously its scale
16 is somewhat different, but I'm personally not convinced
17 that its scale justifies such a dramatic departure from
18 current practice.

19 MR. CHAIRMAN: Could I ask
20 another question involved with this, what depends on what
21 here. It would appear that the native claims agreement in
22 principle dictates the time for approval in principle of
23 the route. Is that correct?

24 MR. TEMPLETON: No, that
25 just happens to occur at the same time. It came as the --
26 I think Mr. Naysmith said that the end of '78 --

1 MR. CHAIRMAN: So you would
2 contemplate a decision by government the first of September
3 that went something like this, that yes, we will transport
4 Alaska gas south somewhere / ^{through} the southern Yukon and we
5 will need sixteen months in order to determine which route
6 the government will select?

7 MR. TEMPLETON: Yes.

8 MR. CHAIRMAN: And you don't
9 foresee the approval in principle as allowing the activities
10 three to five commencing? Approval in principle corridor?

11 MR. TEMPLETON: I think Mr.
12 Blair said this afternoon that he was going to do that. He
13 was talking about that he was having a meeting tomorrow in
14 Calgary to talk about the gas contract. He didn't comment
15 on that, but I assume that he feels that that time isn't
16 needed.

17 MR. CHAIRMAN: Yes, I think
18 Mr. Bouckhout's point was that the approval of the -- or
19 the design and construction aspects were the critical path,
20 rather than any of the corporate organizations of staff
21 planinng or financing or gas contracts. Is that correct
22 Mr. Bouckhout?

23 MR. BOUCKHOUT: Yes, Dr. Hill,
24 that's essentially correct. We would obviously, upon
25 approval from the Federal Government, proceed immediately
26 with many of these categories such as corporate organization

Mr. Bouckhout
Mr. Templeton
Mr. Lazerte
Mr. Trevor

1820

1 and staff planning. We certainly wouldn't wait for some
2 two years before starting to plan such an undertaking.
3 We would begin virtually immediately.

4 MR. TEMPLETON: Well I think
5 those items aren't on the critical path anyway. I think
6 it had to do with the design and then where you get on to
7 seven and eight, seven probably is the critical one where
8 you have to order your equipment. You can't do that until
9 you select the route.

10 MR. LAZERTE: Could I ask
11 what the -- how you're using the equipment and material
12 designations in seven and eight. What is the distinction
13 between firstly, equipment and then material that you're
14 using here?

15 MR. TEMPLETON: Well I think
16 all of it, particularly when you get into the permafrost
17 areas, the equipment makes quite a little difference in
18 the environmental activities and the material is pipe and
19 compressor station equipment, things like that.

20 MR. CHAIRMAN: Does any of
21 the panel have further questions? Mr. Trevor?

22 MR. TREVOR: If I may Mr.
23 Templeton, I'd like to get back to your first presentation
24 which I gather was the one you wished to spend some time on.

25 MR. LAZERTE: Before we do
26 that, could we just make one or two more comments on this

1 particular drawing, some of which Mr. Bouckhout has commented
2 on.

3 I'm just wondering on this one,
4 why the drilling starts out with the final engineering and
5 design, doesn't precede it. I have a little problem with
6 that because --

7 MR. TEMPLETON: What are the
8 numbers there?

9 MR. LAZERTE: Eleven and twelve.
10 The relation of eleven to twelve. Certainly your base
11 data, your drilling data is going to be so important to you
12 that it would normally precede by a certain time interval,
13 the final engineering and design.

14 But leaving that point for a
15 moment --

16 MR. TEMPLETON: I don't think
17 that's significant in the critical path and I would agree
18 with you.

19 MR. LAZERTE: Fine. I was
20 just wondering if I might make a suggestion here, that it
21 is a little bit difficult to deal with this mass of data
22 that's in front of us. I was wondering if we could be
23 given the opportunity to work this over in the manner that
24 it is presented.

25 In other words, I believe in
26 our application, we did not deal in depth with the regulatory

1 activities and the approvals and now that we have Mr.
2 Templeton's concept presented to us, if we could attempt to
3 mell these two concepts into our plan and perhaps give his
4 regulatory activities additional thought and present our
5 alternate.

6 MR. CHAIRMAN: Well, that
7 would appear to be fair. My only problem is with time
8 before the end of the week. Could I take it under advise-
9 ment and I'll discuss it with my panel colleagues and give
10 you a decision after we have coffee?

11 MR. TEMPLETON: I should
12 mention, Dr. Hill, that we've had to -- it's only today,
13 a little less than a week from the N.E.B. decision and
14 we're not presenting this as the final C.P.M. We've done
15 the best we could because we felt that it was -- the timing
16 is one of the real key issues. I think there are two main
17 issues. One is, can a corridor be accepted and the other
18 one is how soon does the mainline construction start.

19 To my way of looking at it,
20 those are the two main issues. So we tried to put it as
21 best we could and I'm sure Mr. Blair doesn't agree with
22 some of it and probably you won't either and probably no
23 one will, but we felt that it was a good idea to put it
24 out. It's not an exact thing we've done.

25 MR. CHAIRMAN: Okay, fine.
26 Thanks for the clarification. I wonder if the -- I'm used

1 to working with critical paths when I'm working with
2 critical paths rather than bar diagrams. I wonder if you
3 do have the original critical path that you could make
4 available for our use?

5 MR. TEMPLETON: It depends
6 on the time. We have a real difficulty getting mail here
7 or even air express.

8 MR. CHAIRMAN: Yes, well I'm
9 sure that one can discern the critical path from reading
10 the text.

11 MR. TEMPLETON: Okay, we'll
12 try and make one with what we have and give it to you.

13 MR. CHAIRMAN: Well, the
14 timing issue appears to be becoming a critical issue and
15 I think it behooves us to understand the critical points
16 -- too many criticals there, but the critical points in the
17 process, so I personally would like to learn more about it.

18 But in the meantime, let's
19 get back to the original paper and Mr. Trevor has a
20 question.

21 MR. TREVOR: Yes, Mr. Templeton,
22 just so that I can get a proper grasp of the point you're
23 trying to make, you start off in your paper talking about
24 a regulatory agency which later on, develops into a fully
25 fledged board. Is this correct? With two other agencies
26 within it?

1 MR. TEMPLETON: No, I think
2 the confusion is mainly on the socio-economic.

3 MR. TREVOR: Yes, this was the
4 point I wanted to get to actually. You make the statement
5 in the first paragraph that the establishment of such an
6 agency is urgent and you notice that the N.E.B. and the
7 Yukon Territorial Government agree.

8 I'd like to query that point.
9 My interpretation of the N.E.B. report is that it does not
10 agree with this setting of a regulatory agency concerned
11 with the engineering and environmental aspect. But it does
12 indeed agree with the establishment of a central agency
13 for the socio-economic aspects.

14 Then it goes on to say that
15 the monitoring authority would in the Board's view, act
16 in a complimentary and co-operative manner with the Board.
17 So the Board is in effect, holding onto itself, all the
18 powers that it presently holds. That's the interpretation
19 I put on the N.E.B. report.

20 MR. TEMPLETON: That isn't
21 my interpretation, but I -- there's not very much said
22 about it and I think we've both read it several times.

23 MR. TREVOR: No, I just
24 wanted to -- so that in other words, what you're recommen-
25 ding then is an all-embracing agency which would take over.

26 MR. TEMPLETON: No, I think--

Mr. Trevor
Mr. Templeton
Mr. Surrendi

1825

1 MR. TREVOR: In effect, what
2 the N.E.B. is responsible for today?

3 MR. TEMPLETON: Well, the
4 N.E.B. is not responsible for the socio-economic aspects.

5 MR. TREVOR: Yes, but in --
6 this is a point I was making.

7 MR. TEMPLETON: To date they haven't
8 really addressed to any great degree, the environmental
9 aspects. They did on the pipeline between Sarnia and
10 Montreal, but they -- I think the degree of control, this
11 regulation that we're contemplating here and I think every-
12 body is contemplating, is considerably greater than was
13 applied on the Sarnia-Montreal line.

14 We're differentiating in the
15 agency. We say the agency should look after the engineer-
16 ing and the environmental matters and that it should be a
17 single agency and not necessarily the N.E.B. because one
18 of the reasons is that it's a very large project and I
19 don't really see that it's advisable for the N.E.B. to
20 grow to that size for one project.

21 We have always said that we
22 expected that this fairly large agency would have a self-
23 destruct mechanism built into it, so that it couldn't go
24 on forever like the Halifax explosion group that just
25 died the other day.

26 MR. SURRENDI: Mr. Templeton,

1 you mentioned a second ago, something to do with the
2 Sarnia-Montreal pipeline -- the authority and the enforce-
3 ment or the stipulations that were placed on it by the
4 National Energy Board and that it wasn't quite working
5 out as properly as it should have.

6 Could you please elaborate a
7 little on that?

8 MR. TEMPLETON: No, I don't
9 think I said it was working out as well because I don't
10 know.

11 MR. SURRENDI: That's the
12 interpretation I put on it.

13 MR. TEMPLETON: I'm sorry.

14 MR. CHAIRMAN: Could I inter-
15 vene here and could I have Mr. Trevor continue with his
16 line of questioning and then get back to you.

17 MR. TREVOR: I was just
18 looking in your paper again Mr. Templeton. I can't quite
19 place it, but you did indeed start off with the recommen-
20 dation for an agency which would control the construction,
21 the engineering, the environmental aspects.

22 MR. TEMPLETON: Yes.

23 MR. TREVOR: Then later on,
24 you developed the theory of a Board of which the agency
25 would only be a part. Then the socio-economic aspects
26 would also be covered by another group within that Board.

1 Am I not correct?

2 MR. TEMPLETON: No, I think --

3 MR. TREVOR: Maybe I'm
4 attributing from N.E.B. in that.

5 MR. TEMPLETON: Mr. Hernandez
6 says that all this reference to the Board was in Mr. Doyle's
7 paper.

8 MR. TREVOR: Oh, I'm sorry,
9 it's in Mr. Doyle's paper.

10 MR. TEMPLETON: Yes, this is
11 when on Page 6, I think, of Doyle's paper at the top, second
12 line, he says the Project Control Board and I think I broke
13 my reading the presentation at that point and said that
14 it wasn't really a Control Board we're talking about. It's
15 a planning, sort of the Yukon socio-economic planning
16 authority or something like that.

17 It's really a planning
18 mechanism that includes information to the people and
19 discussion of all of the social problems and I think that's
20 a different function than a regulatory agency that's
21 controlling the environmental and the engineering aspects.

22 MR. TREVOR: Yes, I agree.
23 I just wanted to make sure that the agency Mr. Doyle talks
24 about is the same agency that you're talking about and
25 that indeed, socio-economic matters would not be handled
26 in the agency you're referring to.

1 MR. TEMPLETON: I think we're
2 both talking about the same, when we talk about agency,
3 we're talking about the same thing. When we talk about the
4 Project Control Board, we're not.

5 MR. TREVOR: Something bigger?

6 MR. TEMPLETON: Yes and the Project
7 Control Board to my way of looking at it would be a very
8 small Board and can have somebody at -- well, I think the
9 Commissioner yesterday, suggested that Mr. Robinson, former
10 Deputy Minister of D.I.A.N.D. would be a logical choice and
11 I don't disagree with that. But what we're talking about
12 is a very high level group at the planning stage, including
13 Territorial Government person, say Deputy Commissioner
14 level plus representatives from the Yukon - Council of
15 Yukon Indians or somebody like that and perhaps somebody
16 from the City of Whitehorse and somebody from one of the
17 smaller communities.

18 So that the people of the
19 Yukon are represented on the planning activity and could
20 express themselves with quite a lot of authority if they
21 found that the agency or the applicant was not doing its
22 job.

23 MR. TREVOR: Yes, I can
24 understand that. I'd still like though, to try and pin
25 down this question of the National Energy Board as you
26 see it fitting into the regulatory agency. Do you have --

1 MR. TEMPLETON: I'm sorry, I
2 missed --

3 MR. TREVOR: To go back to
4 the agency again, dropping down to that level. How do you
5 see the National Energy Board fitting into that agency?

6 MR. TEMPLETON: Well, we've
7 always said that we didn't feel that the National Energy
8 Board was the vehicle to be the agency, because we felt
9 that it was a size that was greater than the National
10 Energy Board's function and that it would be better because
11 there is some forty-five laws I think that it would apply
12 -- I'm not sure about that in the Yukon, but -- yes, I
13 guess the Commissioner yesterday said there was something
14 like forty or something.

15 So I think perhaps that's
16 putting a lot on the Energy Board to do that and it seemed
17 to us that it would be better if a single agency were set
18 up for this project and make sure that it was going to
19 cease at the end of construction. It wouldn't follow the
20 project through the operation at all. It would cease at
21 the end of construction.

22 MR. TREVOR: So the agency
23 staff you see being seconded from existing government
24 departments principally?

25 MR. TEMPLETON: Yes and the
26 Territorial Government.

1 MR. TREVOR: Going back there
2 after the job was finished?

3 MR. TEMPLETON: Yes.

4 MR. TREVOR: What do we do in
5 the intervening six years with the jobs that they should
6 have been doing which they got seconded from?

7 MR. TEMPLETON: Well, that's
8 the problem isn't it, but that's going to be the problem
9 of Canada anyway isn't it? Canada is going to be faced
10 with that because you can't have a regulatory body without
11 government people because you need their skills. There
12 just aren't that many outside the government.

13 MR. TREVOR: Thank you.

14 MR. CHAIRMAN: I have one
15 minor question. On page 6, when you're asking the question
16 can the Cabinet transfer authority under a number of acts
17 from various departments to a different department or
18 agency on a one project basis.

19 I believe your ~~aside~~ was the
20 N.E.B. says yes. Could you --

21 MR. TEMPLETON: What was the
22 number of that Dr. Hill?

23 MR. CHAIRMAN: Number 6.

24 MR. TEMPLETON: Number 6,
25 question 6.

26 MR. CHAIRMAN: Number 5, I'm

1 sorry. Number 5. I believe you have made an aside after
2 you read that, you said the N.E.B. says yes.

3 MR. TEMPLETON: Yes.

4 MR. CHAIRMAN: Could you
5 refer us to the document?

6 MR. TEMPLETON: I think they
7 put it this way, that they don't feel that any legislative
8 acts were necessary. I'm not sure whether I've said it
9 right or not, but they felt that the authority is already
10 there to do what was needed.

11 MR. CHAIRMAN: To transfer
12 for instance, the management of the Fisheries Act from the
13 Minister of Fisheries?

14 MR. TEMPLETON: Well, they
15 didn't -- I don't think they went into it that way, but
16 they -- I'm trying to think of the wording and I probably
17 won't be able to. I guess I won't answer that.

18 MR. CHAIRMAN: Well, it's
19 found here. I'm sorry, it is the Board's impression that
20 if not all of the required powers exist under that --
21 most if not all, of the required powers exist under
22 present legislation, what would seem to be needed are
23 Cabinet directives on the priorities to be attached to the
24 work of the monitoring authorities. It doesn't seem to
25 approach that issue.

26 Anyway, we'll look it up

1 because it would be a surprise to me.

2 MR. TEMPLETON: That was the
3 thing that I was referring to so perhaps I've interpreted
4 it wrongly.

5 MR. CHAIRMAN: Any more
6 questions from the panel?

7 MR. CHAMBERS: I would take
8 it Mr. Templeton, your main concern in putting forward this
9 schedule are the socio and economic impacts that you have
10 some fear of, having more weight than the environmental
11 impacts that you feel / ^{could} be mitigated against. Is that a
12 fair assumption of -- analysis of what you're putting for-
13 ward to us?

14 MR. TEMPLETON: No, I don't
15 think so. I think what we're saying is that the -- we
16 feel that -- we can see coming to a satisfactory conclusion
17 - a satisfactory arrangement of an agency plus an engineer-
18 ing and environmental codes to administer it. We feel
19 that within the time frame we've given, that those could
20 be drafted and could be successful.

21 But we felt that the drafting
22 of the planning mechanisms to do with the public, take a
23 lot longer and are much more difficult to spell out. You
24 can't really spell out a social code that the people are
25 going to live up to when they drive down the highway,
26 whereas you can spell out an environmental code that the

1 applicant must adhere to or he'll get shut down.

2 I think that's what I was
3 saying. It's more -- I don't think the social planning
4 aspects are as far advanced as are the engineering and
5 environmental, but the engineering and environmental are
6 pretty important.

7 MR. CHAMBERS: Yes, I wasn't
8 trying to discount their importance and I see what you're
9 getting at. You feel that there is adequate or reasonably
10 adequate regulations in various acts and legislation now
11 to control the environmental aspects and you're saying
12 that the -- I shouldn't be putting words in your mouth --
13 are you saying that there is not the same kinds of legis-
14 lation and regulations in regards to the socio and economic
15 impacts?

16 MR. TEMPLETON: That's right.
17 And of course, I suppose some of the social things have
18 pretty serious implications on the environmental too. It's
19 a big management job. If you don't work out a way of
20 limiting the guns on the Dempster Highway, you can cause
21 some problems. It isn't only the pipeline workers, it's
22 their families and their off-hours and all the rest of it.

23 MR. CHAIRMAN: Could I put
24 another question to you Mr. Templeton. Some of the Alaska
25 Highway pipeline proposal for the first few miles and most
26 of the Dempster lateral would be built in a situation where

1 innovative engineering design would be required, and one
2 could hypothesize that this engineering design would be
3 innovative and would have to build into it, environmental
4 controls that would depend upon the data and the tests and
5 so on that were carried out throughout the planning phase?

6 MR. TEMPLETON: Yes.

7 MR. CHAIRMAN: In other words,
8 it's an unusual pipeline situation, but quite a common
9 situation in an innovative engineering situation?

10 MR. TEMPLETON: Yes.

11 MR. CHAIRMAN: Do you feel
12 that the control agency, bearing in mind that it would
13 take some time to be formed and to be working together as
14 a team, do you feel that the control agency would be the
15 correct body to interface with the proponent in this
16 innovative design phase?

17 The reason I ask this
18 question is I would feel that a very high degree of
19 co-operation would be required between government scientists
20 and engineers and the company in order to achieve what
21 we're all looking for and that's an environmental accept-
22 ably built project.

23 It would appear that the
24 personnel required for the surveillance activity, the
25 policing activity, would be different people than the
26 people required to develop an innovative design of this

1 sort. I'm wondering whether or not, the two functions can
2 really be built in to the same agency?

3 MR. TEMPLETON: Well, I think
4 they have to be. When you get into the design phase as to
5 what the agency is going to approve, it has to consider
6 the practical aspects and it has to do it on an inter-
7 disciplinary basis, because otherwise, you're going to
8 -- or say you take a group who are interest in permafrost and
9 they're going to solve the permafrost problem, but they're
10 going to create a whole lot of other problems to do with
11 fish and water quality and erosion and other things.

12 So that your agency in my
13 opinion, must be of an interdisciplinary nature and have
14 with it, all the people so that they can make the trade-
15 offs because they have to sit down and say, well on this
16 hand we could do that, on another hand we do something
17 else. Out of it, will come the best solution and I think
18 that group has got to follow it through because when a
19 pipeline starts, they're not going to want to wait for
20 you to hold a committee meeting. The people there or the
21 people, not necessarily all on the job, but you have to
22 have an organization on which you can call on the people
23 that made the original decision and say, look, it didn't
24 turn out that way and we can't do that. How are we going
25 to fix it.

26 So I think very strongly that

1 it should be single agency right from the start and they
2 will be responsible to see that it's produced, the actual
3 job is finished that way.

4 MR. CHAIRMAN: Yes, it would
5 just appear to me to press the point just a little further,
6 that in the initial phases of the design approval, both
7 the company and the government would want some of the best
8 research scientists if you like and innovative engineers
9 working on those aspects.

10 In the last phases, you will
11 want I would expect, good surveillance personnel and I
12 don't see the same person, the same group even, of people
13 having the right attitude to carry out the two functions.

14 MR. TEMPLETON: Well, I
15 think that's true, but I don't think that everybody that
16 goes in the agency would stay the full life of the agency.
17 In that purple book, shows the buildup and the tapering
18 off and you're quite right. Your top people are going to
19 be needed at the front end to work out what's needed at
20 the particularly, in the northern end and that the latter
21 part will be more a conventional supervision of construc-
22 tion type of job.

23 But it seems to me that that
24 still needs those people on tap if you have to. Some of
25 them may have gone back to their regular department, but
26 they should be on tap so that you can draw on their

1 experience if you want to change something.

2 MR. CHAIRMAN: Thank you.

3 I think at that point, I'll call for a recess and we'll have
4 a cup of coffee and we'll come back and ask Foothills if
5 they'd like to comment on your presentation.

6 (PROCEEDINGS ADJOURNED).

7 (PROCEEDINGS RESUMED PURSUANT TO ADJOURNMENT).

8 MR. CHAIRMAN: Okay, on this
9 matter of schedule as presented by Mr. Templeton, we will
10 hear more about it after we finish hearing what people have
11 to tell us about the alternates within the Yukon. This is
12 scheduled for the alternates within the Yukon, are scheduled
13 for Tuesday and Wednesday, with Thursday and Friday left
14 for hearing what we could learn from the analysis of the
15 application down the Mackenzie.

16 So that probably, it will be
17 sometime Thursday, before we finish with alternates within
18 the Yukon if that's all right.

19 Also, I've been informed that
20 Chief John Joe Kaye and Mr. Njootli from Old Crow would
21 like to address the panel and they will be here tomorrow
22 at 1:00 o'clock. I realize that on our schedule, the
23 Dempster lateral is put after the alternates -- the other
24 alternates within the Yukon or the alternates within the
25 Yukon for moving Alaska gas south, so what I'll propose
26 is that we hear Mr. Kaye -- Chief Kaye and Mr. Njootli.

1 We will have discussion on the
2 Dempster lateral as much as we can. We will then discuss
3 the alternates within the Yukon to move Alaska gas south
4 and finish up discussion with the Dempster lateral for
5 anyone that was planning on coming after our discussion
6 of the alternates.

7 Okay, I guess it's Foothills'
8 turn to comment on Mr. Templeton's brief.

9 MR. BOUCKHOUT: As mentioned
10 Dr. Hill, by Mr. Lazerte, we really would like a bit of
11 time to review this and as mentioned by yourself, we'll be
12 discussing scheduling matters again in the upcoming days.
13 At that time, I expect we'll perhaps have an opportunity to
14 discuss this in a bit more detail.

15 I think Mr. Templeton
16 characterized the schedule as an example and I'm not sure
17 precisely how it was developed and I think in that respect,
18 then, we will view it in the context of our experience,
19 the experience of many people with pipeline construction
20 dealing with regulatory agencies and providing design and
21 comment on it then.

22 With respect to the agency
23 concept in conventional pipelining construction, this is
24 not only very short sections, this also includes at any
25 one time, pretty extensive sections of the pipelining.
26 The operating companies of course, have dealt with a

Mr. Bouckhout
Mr. Romaine
Mr. Surrendi

1839

1 number of agencies. In this respect, whether it proceeds in
2 that manner or whether it proceeds in the Yukon in dealing
3 with a single agency, there are certainly merits in dealing
4 with a single agency particularly if that agency is then
5 charged with all the appropriate rules and regulations and
6 authorizations.

7 I think in the context of
8 environmental matters would probably expedite things con-
9 siderably. Those are really the only comments I have at
10 this time, on the two topics. They have been discussed
11 many times before and we will respond in due course as we
12 go through the next couple of days.

13 MR. CHAIRMAN: Thank you.

14 Mr. Romaine?

15 MR. ROMAINE: I believe on
16 this topic, that Mr. Surrendi has a few questions of
17 clarification.

18 MR. SURRENDI: My apologies
19 for the previous interjection.

20 Again, I would like to go
21 back to Mr. Templeton and ask him to elaborate somewhat
22 on the Sarnia-Montreal pipeline situation. I made perhaps
23 an interpretation - an erroneous interpretation on his
24 statement previously and I'd like some elaboration on that
25 and perhaps some detail on the Montreal-Sarnia situation.

26 MR. TEMPLETON: Well, my

1 understand -- I wasn't criticizing it because I don't know
2 the Sarnia-Montreal pipeline, but I did inquire as to the
3 magnitude of the regulatory agency that was administering
4 it and I think it was seventeen. I got that from the
5 National Energy Board.

6 Now, to my way of looking at
7 it, this is not of the magnitude of regulation that is
8 needed for this pipeline. It's considerably in excess of
9 that to look after this pipeline and so, although I wasn't
10 criticizing it in either what they had done or what they
11 had planned, but in that purple book, I think we show
12 considerably, a very much larger regulatory agency in
13 that. Mind you, that was designed for the two applications
14 on the Mackenzie route. This is considerably different
15 and I think as people have pointed out, this one is -- this
16 route is a much more conventional route than any of the
17 Mackenzie.

18 So the size of the agency in
19 that effort is probably larger than is needed here. Of
20 course, the project was much larger there, but I still
21 think that seventeen people, if that's the right figure,
22 is a pretty small agency.

23 MR. SURRENDI: Could I ask
24 a couple of supplementary questions. One is, does the
25 N.E.B. have a surveillance system set up outside of this
26 seventeen people to ensure compliance with their environ-

1 mental conditions as presently applied to such projects?

2 I am unfamiliar with this group and I would be prepared to
3 suggest that they would have difficulty doing this at this
4 time. Can anybody elaborate on that for me?

5 MR. TEMPLETON: Well, I'm
6 just a poor little fellow from the private sector, so I
7 don't know what you fellows in the public sector do.

8 MR. CHAIRMAN: You asked a
9 bunch of questions to find out, I noticed.

10 MR. SURRENDI: You know, this
11 sort of fell from the discussion, Mr. Trevor's discussion
12 regarding the ability or the desire of the National Energy
13 Board to allow this authority to go out.

14 My question is, they may or
15 may not have the authority and I'm not that familiar with
16 the situation, but it doesn't appear that they have the
17 capability to set up this kind of a system. I would venture
18 to say that somewhere down the line, it appears that some-
19 body is going to have to look after that.

20 MR. CHAIRMAN: Well, maybe
21 a point of clarification here, that the two prime acts
22 that relate to this project are the National Energy Board
23 Act and the Territorial Lands Act.

24 We sit because the Minister
25 responsible for the Territorial Lands Act, asked for advice
26 on environmental matters. Presumably, if an agency - a

1 combined agency was not set up, he would be responsible for
2 implementing the recommendations he's chose to accept from
3 this panel. Whether or not the National Energy Board has
4 staff in order to do the same thing, may be, I don't know,
5 but I just wanted to point out that north of the 60th
6 parallel, the situation is different, in that there are two
7 acts which apply.

8 There are more acts than that
9 which apply of course, but these are the two major acts.

10 MR. SURRENDI: Mmm-hmm. One
11 or two other questions. Mr. Templeton, you've basically
12 covered the first part of my question which was in regard
13 to the manpower requirements that we had stressed as
14 necessary for an agency to do the job in the design review
15 field in regard to our environment or to the purple volume
16 that you have there.

17 You mentioned that it would
18 probably take less in an agency to do the same job in the
19 Yukon with regard to this particular pipeline. What about
20 the additional members to this particular group or this
21 Board of authority, say from the sociological aspects. I
22 suspect that there would be a considerable number of people
23 involved from that field. Do you have any estimates on
24 that?

25 MR. TEMPLETON: No, we would
26 like to see the social aspects handled by existing Yukon

1 organizations. Now, they're going to have to have funding
2 and they're going to have to have additional people. Well,
3 we would like to see the native organizations, the City of
4 Whitehorse, Territorial Government and the communities along
5 the route and you know, the mental health people and
6 others, get involved in the planning.

7 We feel it's they who have to
8 live with it here and if they understand the problems,
9 they'll meet them. So I'm not sure how far you have to go
10 but certainly, there is a considerable amount of funding
11 needed. I guess the Energy Board recognized that and said
12 that the applicant would put up two hundred million dollars
13 towards indirect social damages.

14 I don't know whether that
15 includes funding these organizations or not, but I think
16 they at least recognize that problem.

17 MR. SURRENDI: One final
18 question and then I'll address it to I suppose the panel
19 at this point. In regard to the secondment of personnel
20 to an agency such as this, presumably, most agencies
21 involved in the administration and enforcement of stipu-
22 lations regarding a pipeline would have personnel involved
23 in the field situation to do this particular job.

24 Now, the question that I'd
25 like to ask is irrespective of whether they are working
26 for an agency or have they been seconded from an agency

1 to work on this particular pipeline in the agency itself
2 or were working in the agency, say the wildlife service or
3 the Yukon Game Branch or what have you. What difference
4 does it make whether they are working for one or the
5 other, they have to do the job anyway. Is there any real
6 reason to worry about how they were going to take care of
7 their other duties when in fact, probably their other
8 duties would be largely to do with the pipeline activities
9 in the first place if the priorities were that high?

10 What I'm saying is that, why
11 worry about it when you're going to have to do the job
12 anyhow. Does it make any difference whether they're
13 working for one group or the other I suppose?

14 MR. CHAIRMAN: I believe it's
15 a rhetorical question.

16 MR. SURRENDI: Well, it was
17 brought up by Mr. Trevor and I thought that I'd just like
18 perhaps a statement on it.

19 MR. TREVOR: If you'd like me
20 to answer it, I'll try. I think the simplest answer is
21 that somebody has to act as God and there is going to be
22 differences of opinion even between different people from
23 different agencies somewhere. There has to be the line
24 of authority established somehow.

25 I think this is the point that
26 Mr. Templeton is making, that there has to be a clear line

1 of decision-making on the part of government. Would this
2 be a fair interpretation Mr. Templeton?

3 MR. TEMPLETON: Yes, I think
4 my question, although poorly put, relates back to your
5 statement regarding what do I do for additional personnel
6 to fill in the spaces. The question is, you'd probably --
7 if you didn't let them go, they'd still have to be working
8 on the pipeline. I think basically that was my point for
9 what it's worth.

10 MR. CHAIRMAN: Right. Mr.
11 Romaine?

12 MR. ROMAINE: Yes, Mr.
13 Chairman. I believe we have a couple of questions. One
14 question for Mr. Templeton. Looking at your brief on
15 page 6, particularly questions five through to eight,
16 really you're dealing with the question there of the
17 establishment of a central agency and sort of a complex
18 re-organization of government authorities perhaps to
19 achieve that.

20 Just a general question.
21 Would your control group work equally well if it composed
22 of a co-ordinated group of existing agencies. The reason
23 for this question is giving some thought to perhaps projects
24 of a smaller magnitude where people have been seconded to
25 work together and in this way, they also carry the respon-
26 sibilities and expertise with them to the project as a

1 group.

2 MR. TEMPLETON: Well, I think
3 that they would have to be seconded to it from the other
4 -- from the departments, but this is -- I used the analogy
5 of the war effort and a big project where you're talking
6 about a billion and a half dollars that in this area alone,
7 plus what's in B.C. and Alberta and Alaska because part of
8 that is felt here too on the highway, that it requires a
9 very disciplined organization and if a person is in a
10 regular department and has a lot of departmental duties, he
11 naturally is going to be more concerned about those I think
12 than the agency.

13 We felt that it should be
14 -- the agency should get busy and work very hard for the
15 life of it and it had to be staffed with a staff that they
16 could put some discipline on. I've never had much success
17 about working any kind of an organization where I couldn't
18 apply some discipline. I don't really believe in committees.

19 MR. ROMAIN: Okay, thank you.
20 That's fine.

21 MR. CHAIRMAN: Okay, does
22 the panel staff have any questions? Are there any comments,
23 questions from the audience? Does the panel have any
24 further comments? Mr. Trevor?

25 MR. TREVOR: Just one little
26 supplementary Mr. Templeton, in terms of an over-riding

1 agency, would you see extending this authority for the
2 whole of the project, in other words, south of 60?

3 MR. TEMPLETON: As far as I
4 have gone, no, but the duties of the provinces -- I realize
5 the National Energy Board's authority runs across -- right
6 across the country, but the Department of Indian and
7 Northern Affairs doesn't to the same degree and there is
8 different arrangements in each province between Federal
9 departments and Provincial departments. So it, I think,
10 would be somewhat difficult to put it into the provinces
11 unless they ask for it.

12 I would gather, although this
13 has been talked about now for several years, that they
14 have not asked for it. So basically, I think it would
15 be the Yukon.

16 MR. CHAIRMAN: Well, what
17 -- the decision-making north of the 60th parallel, someone
18 living in Watson Lake for instance, would be affected by
19 the project one way you are suggesting and a person south
20 of the border would be affected in an altogether different
21 way, when the decision-making of the project was totally
22 within the jurisdiction of the Federal Government?

23 MR. TEMPLETON: I think that's
24 unfortunately right. I would hope that the Province of
25 British Columbia and Alberta would reflect the planning
26 that has gone on north of 60. I heard a couple of weeks

1 ago that B.C. suddenly realized that they should be
2 thinking about an impact assessment, in British Columbia
3 believe it or not at this late date. But it would be very
4 unfortunate , particularly in the social field if ^{the} Yukon
5 published all over the place that they don't want -- that
6 they can't have any hiring of people from southern Canada
7 in the Yukon, which is what the Territorial Government says
8 and in my opinion, quite properly, and found that B.C. was
9 encouraging them to come up the highway and they suddenly
10 get to the border and the Territorial Government says where
11 are you going to stay and how much money have you got and
12 this sort of stuff.

13 So I think that will be solved
14 and I think there is a great deal more of preparation here.
15 I'm very pleased with the amount that the Territorial
16 Government has seemingly done in the social field.

17 MR. CHAIRMAN: Can we move
18 off of that. Would you like to say something in summation
19 Mr. Templeton?

20 MR. TEMPLETON: No, I think
21 I've said enough.

22 MR. CHAIRMAN: Okay. Now,
23 you've suggested two topics to me and are they both included
24 in the same document - the one is single agency and the
25 other is the scheduling problem.

26 MR. TEMPLETON: Yes.

1 MR. CHAIRMAN: Mr. Romaine,
2 you had a couple of issues you'd like to address to us.

3 MR. ROMAINE: Yes, Mr.
4 Chairman. Two issues. The first one deals with potential
5 adverse weather effects on construction schedules and Mr.
6 Herb Wahl will be discussing that.

7 MR. WAHL: This partially
8 complements what Mr. Templeton has been saying, although
9 certainly I haven't gone to the breadth that he has. In
10 my opinion, there are a number of climatic hindrances
11 which may affect the pipeline construction which have not
12 been identified as yet.

13 I would like to ask some four
14 or five questions at the end, to allow an appreciation of
15 what Foothills expects to take place during the construc-
16 tion phase and I believe it will allow a better appreci-
17 ation if possible, the possibility of the alternate routes
18 as well.

19 The atmospheric environment
20 service's interest are with the climate and weather for
21 areas within Canada, including air quality and noise. In
22 general, gas pipelines will have little climatic impact
23 on a regional or a national scale, but there could be
24 considerable modifications in the immediate area of the
25 pipeline.

26 Air quality and noise will be

1 of concern throughout the construction phase, but this
2 concern should become more localized in the vicinity of
3 compressor stations during the operational phase. However,
4 rather than the effect of a pipeline on the climate, I
5 would like to address the effects of the climate on a pipe-
6 line, its construction and operation.

7 Briefly, the climate of the
8 Yukon can be described as potentially very cold winters,
9 cool summers, low precipitation, but particularly, a great
10 deal of variability day to day and year to year. Snag has
11 set the North American record for cold temperatures with a
12 reading of eighty-one below, closely followed by Mayo with
13 eighty below. Dawson City has had periods of cold weather,
14 went for thirty consecutive days, the temperature remained
15 below forty below, eleven of which days remained below
16 fifty below.

17 Mayo has had fifteen consecu-
18 tive days when the visibility and ice fog did not go above
19 a half a mile, associated with a prolonged cold spell.
20 These cold spells, particularly over the southern Yukon,
21 can break within two days, resulting in a week of thirty
22 to forty above, only returning to another severe cold
23 spell.

24 Admittedly, these statistics
25 are extreme, but they are indicative of the climatic
26 conditions which could occur during construction and

1 operation of the pipeline. Foothills in their application,
2 identified the construction could be curtailed due to such
3 climatic conditions as cold spells, blizzards, lack of
4 sufficient snow cover, low visibilities in fog or blizzards,
5 excessive rainfall, but have not provided any definitions
6 for these criteria.

7 The questions I'll ask, I
8 don't really expect a firm answer, but if at all possible,
9 could you give us some sort of guidance on it. During
10 the construction phase, at what temperature would construc-
11 tion be halted?

12 MR. BOUCKHOUT: I think Mr.
13 Wahl, with regards to halting construction, it's really
14 a matter of looking at two aspects, the effects on your
15 personnel as well as the effects on your machinery.

16 When you're talking about
17 personnel, you're really dealing with a combination of
18 temperature - wind primarily, whereas with machinery, more
19 so exclusively with temperature. Perhaps Mr. Saker might
20 be able to give us some assistance on this. I expect
21 in general terms, that construction would be certainly
22 curtailed in the order - in temperatures in the order of
23 minus thirty degrees. Perhaps Mr. Saker might want to
24 add something to this. I gather that's about right. Minus
25 thirty fahrenheit. I believe that's getting to the range
26 where minus thirty celcius almost equates.

1 MR. WAHL: Blizzards would not
2 generally be a problem in the heavily forested valleys in
3 the southern Yukon, but could be a problem above the tree
4 line at higher elevations and over the more barren northern
5 Yukon. In what way will blizzards affect construction?

6 MR. BOUCKHOUT: Well, in our
7 respect, given the location of the project, I can't foresee
8 blizzards as you've described them in the northern Yukon
9 affecting our project at all.

10 Our project routing is
11 essentially within the tree line within the forested
12 area and in that respect, I don't think blizzards are
13 really going to be significant in terms of extended shut-
14 downs.

15 MR. WAHL: There are poten-
16 tially a few areas just west of Haines Junction, the Bear
17 Creek Summit, if you do play around with the Ibex in that
18 high country in there, it also could happen there.

19 MR. BOUCKHOUT: That of course,
20 is primarily summer construction as well. We're dealing
21 with winter construction only for the northerly hundred to
22 hundred and ten miles in that order.

23 MR. WAHL: Previously, we've
24 already discussed this but no firm answer came out of it.
25 On sensitive permafrost terrain, what minimum snow cover
26 and frost steps will be required before construction can

1 begin?

2 MR. BOUCKHOUT: Mr. Wahl, I
3 don't personally recall what the actual numbers were.

4 MR. WAHL: The numbers as
5 given were eight inches of snow and five hundred and fifty
6 fahrenheit frost degree days. This was not firm by any
7 means.

8 MR. BOUCKHOUT: No, I think
9 those were the numbers given by Mr. Templeton's group.

10 MR. WAHL: Right.

11 MR. BOUCKHOUT: We have done
12 considerable work on this particularly in relationship
13 to the Maple Leaf project where we spent considerable
14 effort in defining what would be required in terms of
15 frost penetration and snow cover in thaw sensitive soils.

16 We have reports available
17 from that project on that issue. We do not have reports
18 available exclusively on the Alaska Highway project, as
19 the two in respect to ice sensitive or thaw sensitive
20 soils are similar. I just simply can't give you the
21 answer, although as I recall, given scheduling starting
22 construction in January, early mid -- late January actually,
23 I believe, that it was deduced/ ^{that} in terms of frost penetration,
24 certainly there was no problem.

25 With respect to snow cover,
26 I'm not exactly sure what the situation was. I know we

1 had a discussion here with someone from Dr. Templeton's
2 group on the eight inches. I don't know if we've ever
3 satisfactorily resolved whether -- in fact, eight inches
4 were necessary to begin construction. I don't believe in
5 our opinion, that eight inches is necessary to begin
6 construction.

7 MR. WAHL: Well, the only
8 thing to a degree that I'm trying to point out here is
9 that there really are no guidelines in some respects in
10 which some governing agency, which is not us, but some
11 governing agency would have to be able to make a decision.

12 Similarly, on sensitive
13 permafrost terrain, what criteria would halt construction
14 due to falling?

15 MR. BOUCKHOUT: With respect
16 to that, I know that the land use people do have authority
17 to halt activity, particularly activity which is based on
18 winter roads or on snow roads. I think the criteria they
19 use is in essence, a visual appraisal of the condition of
20 the access roads.

21 In our respect, our scheduling
22 would be based on probability of certain conditions within
23 a specified period of time.

24 MR. WAHL: I would assume
25 then the answer would be the same for the next question on
26 non-permafrost terrain. Will mid-winter thawing or spring

1 breakup cause cessation of construction?

2 MR. BOUCKHOUT: Well primarily,
3 Mr. Wahl, in non-permafrost terrain, we will be utilizing
4 summer construction. We have in the order of I believe,
5 four hundred miles of summer construction and about a
6 hundred miles of winter construction.

7 MR. WAHL: And similarly
8 during wet spells, will construction be halted and if so,
9 what would be the governing criteria?

10 MR. BOUCKHOUT: Yes, I would
11 think in certain circumstances, that construction might
12 have to be curtailed for a short period of time and I
13 think this would be primarily related to the condition of
14 the access.

15 MR. WAHL: The only initial
16 appraisal I would make that, if they're being governed by
17 the minus thirty degrees fahrenheit in the southern Yukon,
18 there could be a number of days lost in the Beaver Creek
19 area due to periods in which temperatures will be below
20 that. Thank you very much for the information though.

21 MR. CHAIRMAN: I'd like to
22 ask you a question Mr. Wahl. When we're discussing this
23 snow requirement in order to begin construction of the
24 snow roads, as I remember it, the figure of eight inches
25 and so many degree days - I've forgotten how many - were
26 the criteria put forward by the Environmental Assessment

1 Panel, Mr. Templeton's group, and during the discussion,
2 I've forgotten which person from Foothills, pointed out that
3 as long as access to the right-of-way could be obtained,
4 then a snow road or an ice road could be built by making
5 snow without any actual snow on the ground.

6 So consequently, the construc-
7 tion of roads suitable for the construction of the pipeline
8 did not depend on the eight inches. Are you suggesting
9 that this is an impractical situation or --

10 MR. WAHL: Well, for very
11 frankly, within the Beaver Creek area, okay that first
12 forty miles, we're talking ten miles at one time, forty
13 miles or a hundred miles - within the first forty miles
14 within the Yukon, I don't think the snow cover will be a
15 problem.

16 I think that they'll normally
17 have this, although I'm flying in the face of some other
18 authorities at the present time. I don't think they'll
19 have a problem after mid December, that they'll have both
20 the snow cover and the frost degree days that will be
21 required.

22 There have been some occasions
23 when it has not occurred, but generally speaking by mid
24 December, they would have enough snow in that area. I am,
25 although this is part of the other one, when it comes to
26 areas north of the Ogilvie Mountains, this could be a

1 concern up there, but I don't think it's going to be a
2 concern in the Beaver Creek area.

3 MR. CHAIRMAN: Okay, does the
4 panel have any questions? Mr. Saker?

5 MR. SAKER: I'd like to
6 comment on Mr. Wahl's inquiry as to how we take care of
7 down-days. If in the wintertime, we propose to construct
8 thirty miles of pipeline, a hundred and fifty thousand
9 feet from January 21st to March 31st is a probable seventy
10 working days. We work seven days a week and there is no
11 time off for holidays or anything else because a pipeliner
12 is there for a short while and everything goes right on
13 through.

14 So in seventy days, to build
15 a hundred and fifty thousand feet, the crews are capable
16 of performing between four and five thousand feet per day.
17 So rather than assume that as the maximum, we'd then go
18 back to an average of what will happen over that seventy
19 days. If you're following me, in order to complete a
20 hundred and fifty thousand feet, we only have to perform
21 twenty-five hundred feet per day, so we have a built-in
22 factor of in seventy days, between twenty-five and thirty
23 down-days.

24 MR. WAHL: This sounds
25 reasonable in that case.

26 MR. CHAIRMAN: Dr. Hughes?

1 DR. HUGHES: I was wondering
2 if anybody could tell us what kind of production they got
3 with single spread in terms of feet per day on the Alyeska,
4 say at the general vicinity of Fairbanks which would be
5 comparable to climatic conditions in the Beaver Creek
6 area?

7 MR. SAKER: Dr. Hughes, we
8 brought up in previous testimony that we don't think it's
9 fair analogy to compare production of the Canadian pipeline
10 with that of the American with all due respects to our
11 neighbour. But it's our experience that Canadian pipeliner
12 very frankly produces twice the footage per day that the
13 Americans have done.

14 Unfortunately, my Manager is
15 not here, but he was with a construction company that
16 encountered that same condition in Michigan. He antici-
17 pated getting from one of the right figures, about six
18 thousand feet a day. When he crossed the border, he ran
19 into the situation where he got exactly half of that, paid
20 the people the same amount of money, but I think that an
21 honest American will admit to the fact that a Canadian
22 pipeliner will out perform them on the firing line. That's
23 two to one.

24 So I'm afraid we can't tell
25 you what their production was and in comparison to what
26 we expect our people will do up here as they have done in

1 Northern Alberta and Northern B.C. and the Yukon and the
2 Northwest Territories.

3 DR. HUGHES: Thank you.

4 MR. CHAIRMAN: Any more
5 questions from the panel? Questions from panel staff, for
6 Mr. Wahl? Mr. Templeton? Nothing to add? Okay, Mr.
7 Romaine, next subject.

8 MR. ROMAINE: Okay, our
9 second topic deals with environmental specifications and
10 controls and in order to help you perhaps a bit through
11 our presentation, we've broken it down into various
12 sections. Section one deals with the question of data
13 efficiencies. Two, the subject of process and timing. The
14 third section, we would like to ask some points of
15 clarification on discussion that transpired late Friday
16 night of last week.

17 Then to go into another
18 section dealing with some general questions and then to
19 finalize - to make a summary statement on the whole subject.
20 To start off with the question of data efficiencies and in
21 understanding the terms of reference of the Environmental
22 Assessment Panel that were discussed I believe on June 7th,
23 we feel that important points to be considered at this
24 stage is to evaluate the data base upon which such an
25 assessment can be made.

26 The terms of reference as I

1 understand the panel in essence, are one, to look at the
2 question as to whether or not the proposed -- and we're
3 talking about this project particularly -- Alcan Pipeline
4 project is acceptable or not from an environmental impact
5 viewpoint and (b) to come to grips with what the
6 environmental impacts are.

7 The purpose of making those
8 introductory comments and the whole section on the intro-
9 duction which deals with data efficiencies, is basically
10 to provide hopefully, some significance or understanding
11 to the types of questions that we would like to ask later
12 on, on our section.

13 For the purposes of this
14 section, dealing with information deficiencies, we have
15 broken it down into a number of categories and we appreciate
16 that really when you deal with a subject such as data
17 deficiencies, there are overlaps between various categories.
18 You can never break them down neatly, but I think at some
19 stage, it's also significant to break them down because
20 from one to the other sometimes, there is a bit of a flow
21 in terms of how the deficiencies have arisen. Some of the
22 ones that may arise because of problems in one area, they
23 emphasize themselves in another.

24 In terms of the categories,
25 number one, we've identified is base line knowledge or
26 the lack thereof and we've had a fair amount of discussion

1 around the table the last week, respecting concerns,
2 statements, questions and responses. Dealing with our own
3 department for example, concerns or deficiencies related
4 to fisheries, wildlife, hydrology on such topics as
5 specie distribution, habitat, resource utilization,
6 efficiencies and understanding the relative importance of
7 environmental resources to people - the social side of
8 things and so on.

9 In the second category, it
10 really deals with the application of information and at
11 this stage, it's not really too clear in a number of
12 cases, how the concerns, whether they are of a general or
13 specific nature, will be incorporated and how existing
14 information or information to be generated in the near
15 future will be incorporated.

16 Examples would be some of the
17 concerns that we raised with respect to river crossings and
18 the question then again I guess, is the -- how or deficiency
19 at least, as to how such information will be incorporated
20 into the design.

21 The third category of
22 deficiencies really relate to what is being proposed at
23 this stage and I think it's important to have some feel
24 for what is being proposed in order to assess the impact
25 to some degree. To give an illustration of the discussion
26 that's gone on to date, we can think about the permafrost

1 area as a question, the kind of discussion that went on
2 that, the shift over time and understandably as information
3 comes available as to the section that would be in a chilled
4 versus an un-chilled state.

5 There is a number of questions
6 I guess now, or deficiencies at least, as to what is being
7 proposed. In that area for example, it's not really clear
8 as to where the realignment is, whether we're talking about
9 a few feet or miles or what the actual distance is. In
10 other words, we haven't seen the alignment. The point that
11 we'd like to make on this is that really, it's not clear
12 as to what areas will be affected.

13 We have some problem then
14 with what indeed is being proposed. A similar kind of
15 deficiency in this category would relate to river crossings.
16 It's not really clear as to what is being proposed for
17 specific crossings. The same would apply to auxiliary
18 structures. We understand the plan location may change,
19 the whole question of access roads in terms of where they
20 may be located and the rest of it.

21 So there still is from our
22 point of view, some deficiencies as to what is being
23 proposed. Another category of data deficiency really
24 relates to differences in interpretation of the existing
25 data base. One example that comes to mind and perhaps it's
26 the only one, deals with the whole question of the dis-

1 cussion that we had on compressor sites with respect to
2 the probability of ice fog.

3 Just another couple of
4 deficiencies that we won't deal with in any extent at this
5 stage, but it is deficiencies in identifying and developing
6 explicit specifications for protection and procedures for
7 adequately enforcing such specifications, deficiencies in
8 developing effective methods to compensate those suffering
9 from environmental losses.

10 That is section one that
11 deals with our assessment or analysis of data deficiencies.
12 On the second section dealing with process and timing, just
13 a number of points that we would like to make on this. It's
14 not clear really as to how data gaps will be filled, what
15 the process will be to be followed. The whole problem of
16 the variation in data gaps in terms of their significance,
17 we've seen long term data gaps perhaps being required,
18 such as the phenomena with glacier activity or high energy
19 streams.

20 There is obviously also a
21 number of data gaps that could be filled in a shorter
22 period of time. There has been the question raised again
23 for example, with river crossings, the way on how options
24 will be considered for stream crossings. During the
25 discussion here, we've had comments or observations raised
26 with respect to the mode of crossing, the timing and the

1 rest of it. It's not really clear at this stage how all
2 these options and the associated concerns and costs with
3 these options, will be presented.

4 There has been not clear at
5 this stage I guess, and it was raised in the earlier
6 presentation, as to how regulatory bodies have an input
7 into a process. There's been other suggestions and as
8 you'll appreciate, these examples are not categorized in
9 any shape or form, but there has been the suggestion of
10 prioritization of various types of streams. Those for example
11 of high energy versus those perhaps in permafrost areas,
12 the question is, who does the prioritization of these stream
13 crossings, if indeed, that is an acceptable approach to
14 identifying certain types of design.

15 There has been the question
16 again I suppose on the process as to the spacing and siting
17 of access roads and what input is there on those, even at
18 the preliminary design phase, / ^{where} they haven't been identified,
19 to have a review as to where they may go.

20 There has been the questions
21 also in terms of, I think relate to process on enforcement
22 of regulations. I think that Foothills stress correctly
23 that many areas are not under their control, but neverthe-
24 less, it is also a point of process.

25 With that in mind, I would
26 like at this stage to -- well, let me continue -- with

1 reference to the environmental concerns, also the proponent
2 has stated that we will consult, we intend to mitigate and
3 we appreciate those statements; but it is necessary to
4 point out that, in our professional judgment, if the
5 proposed schedule is to be met and with reference to our
6 identified deficiencies, intentions to consult must be
7 replaced by specific discussions and the time frame
8 obviously has to be related to that. Intentions to mitigate
9 must be replaced by explicit definitions of protection
10 requirements in the development of specifications to that
11 end.

12 Again, the whole question of
13 process and obviously the time frame comes in here and
14 particularly when we get to the discussions of the time
15 frame for the project. It's our view that intentions and
16 guidelines will not provide adequate environmental pro-
17 tection. For example, when the worker is beset by
18 extreme winter temperatures or summer insects, and these
19 often occur in circumstances, only explicit requirements
20 adequately specified and properly enforced, will provide
21 adequate protection to fish and wildlife.

22 In terms of some of the points
23 of clarification, I would like to request your patience
24 Mr. Chairman, in going through these, but they were as
25 I suggested, asked very late on the Friday. I'm not quite
26 clear whether I got the points straight or not.

1 I'm not sure how to handle
2 this, but Mr. Bouckhout, if you may recall, we asked a
3 question on sort of the process for finalizing route
4 selection in problem areas. As I understand the process, was
5 that in view of discussions here for example, that your
6 environmental arm would start to look at the alternative
7 routes, would select an optional route and would identify
8 to your engineering department, which route you would
9 prefer. Is that correct? As step one sort of in the
10 process, leading up to final design?

11 Well, perhaps I'll run through
12 these and then you can correct where I run into problems.
13 Two, that from the engineering point of view, you are
14 currently looking at routes and that, of course, will be
15 merged and integrated with the environmental perspective.
16 Once that you decide upon a route, more detail evaluation
17 of the route will take place and the route will be finalized
18 as much as possible.

19 There will be assessment, I
20 believe, of the nature of the impacts, the nature of the
21 degree of design required and the final route indeed will
22 be firmed up a bit more. At that stage, some mechanism
23 for regulatory approval of the design will take place
24 and then following receipt of that approval, final design.
25 Does that roughly correspond to the steps dealing with
26 problem areas and alter the alignment?

1 MR. BOUCKHOUT: I expect Mr.
2 Romaine, in rough terms, it perhaps does. Maybe the
3 best way to proceed is to give very briefly, my appraisal
4 as to how it proceeds and you can see if it fits in with
5 yours.

6 The original route was
7 described, as I've mentioned previously, on the basis of
8 reconnaissance work which included representatives from
9 the Environmental Department. The route was described on
10 the basis of these reconnaissance studies, primarily by
11 the engineering department. Subsequent to that and
12 realizing that the route was one of a reasonably general
13 nature, not one of very site-specific detail. In other
14 words, we viewed the necessity for further study on the
15 ground on a site-specific basis by all disciplines, in-
16 cluding the various component disciplines of the environ-
17 mental group as well as the engineering and construction
18 group.

19 We are now looking at this
20 route on that basis. From an environmental point of view,
21 we are conducting studies, for instance, at river crossings
22 --proposed river crossing locations along the main line
23 route. We are looking at it from various disciplinary
24 perspectives.

25 These include both the
26 biological disciplines, the physical disciplines and other

1 considerations which include such topic areas as aesthetics,
2 recreational implications, archaeology.

3 On the basis of this work that
4 is being conducted and the data that is gathered, the
5 environmental group will then make a decision as to the
6 environmental acceptability of the route as outlined on
7 the photomosaic alignment sheets. Similar work must also
8 be done from an engineering and construction perspective.

9 Where in either case, the
10 situation arises where one group finds that the route
11 described is not feasible, then the other groups must be
12 in a position to respond to that situation and under joint
13 consideration, define another location. Now, this is
14 still at a relatively general scale. When I say that, I
15 mean that we are not necessarily in most cases, to the
16 precision of the exact foot or yard.

17 As we proceed into final
18 design, the studies of course continue. During this stage,
19 we are undertaking additional environmental studies as well
20 as additional technical studies. For instance, geotechnical
21 drilling is an important component. This is an important
22 component not only from an engineering construction
23 suitability point of view, but additionally from an
24 environmental point of view. We've discussed this already
25 as well.

26 As final design proceeds then,

1 the data gathered during the feasibility and preliminary
2 design studies, is input into a final design plan. This
3 final design plan will be based on a mile by mile assessment,
4 site-specific by site-specific assessment.

5 In some cases, it will be
6 very detailed. For instance, at river and stream crossings
7 particularly from a biological point of view. In other
8 cases, it need not be so detailed, as an example, where
9 the route may cross several miles of black spruce muskeg,
10 the view of the various environmental disciplines upon
11 inspection of the route, may be that very detailed infor-
12 mation on a foot-by-foot basis in an environmental perspec-
13 tive is not necessary.

14 From the perspective of
15 drainage control, erosion control, it may very well be
16 necessary. To take it back a step now, in the cases where
17 we have determined that an alternate route may in fact be
18 warranted, as an example the Ibex Pass, this is an instance
19 where the environmental group originated that circumstance.

20 As a result, it is then
21 incumbent in all groups to react to the situation in
22 attempting to define a preferable alternate. Since it is
23 an environmentally based concern, we feel that initially
24 necessary to evaluate environmental alternatives in the
25 area, to come to a stage whereby all groups can participate
26 in a description of a new route. This again, includes the

1 participation of both the engineering and construction
2 departments.

3 We have made those departments
4 aware of our concerns and considerations at an early stage,
5 so that they are not in the dark. They in essence, know
6 what we are doing, the rationale therefore, and they
7 additionally are proceeding at a preliminary stage to
8 review the alternatives, particularly on a reconnaissance
9 basis.

10 At some point then, in the
11 foreseeable future, after that consideration, we will fix
12 on a new route which will be established on the basis of
13 mutual discussions and consideration by the various
14 departments involved. Then in due course, as we proceed
15 with final design on the remainder on the mainland route,
16 final design of course, will also proceed in an alternate
17 or an alternative, if such an alternative is elected.

18 Then in that respect, the
19 entire process proceeds into more detailed perspective of
20 preparing final design documents for the construction
21 segment under discussion.

22 MR. ROMAINE: Thank you.
23 Just two questions on that and let's deal with alternates.
24 Then where do you see some of the regulatory agencies
25 coming in, sort of as you outlined it, where do they first
26 appear in the system?

1 MR. BOUCKHOUT: Really at two
2 stages, Mr. Romaine. At a very early stage, the various
3 interest groups and Federal and Territorial agencies, to
4 my mind, are involved in defining the concern in the first
5 place.

6 We have heard much discussion
7 for instance on the Ibex and on Sheep Mountain, as two
8 examples. Much of that discussion has come from various
9 government agencies and other interest groups. So in
10 actually defining the problem, they are involved at that
11 stage.

12 As I view it then subsequently,
13 the regulatory agency, whichever agency that may be, will
14 review our final design plans and in that case, will
15 obviously be involved at that stage in approving our final
16 design plans. Now, that's not to say that in the interim,
17 all government agencies and interest groups are not in-
18 volved. We hope that through out continuing efforts and
19 the development of design of this project, we can continue
20 to have very close working relationship with such groups,
21 particularly local groups who have experience in the area
22 and have data which can be shared.

23 In that perspective then,
24 these other groups and agencies are involved throughout
25 the process.

26 MR. ROMAINE: Just a couple

1 points of clarification. If you look at the problem areas
2 that we discussed at length over the last day or so, is
3 that what you mean by the input, so your point one that
4 various groups who have defined concerns, will have an
5 involvement. Do you feel that you have that now or is
6 there another phase before you even identify the number of
7 perhaps alternatives within a problem area?

8 MR. BOUCKHOUT: Well sir, I
9 think in that respect, it depends just as much on you as
10 it does on me. It depends how closely we can work together
11 in this kind of a liaison in assessing the route and
12 coming to grips with the concerns.

13 I personally know of no
14 established formal mechanism of doing this in the interim
15 period; however, that's not to preclude that it can be
16 done and should be done.

17 MR. ROMAIN: Just two more
18 questions on this subject. I gather from your just last
19 point, that that would be immediate I assume, that you are
20 now looking or would like to start to look at alternatives
21 within the problem areas sort of right now. Is that
22 correct?

23 MR. BOUCKHOUT: Yes sir,
24 that's correct. We have in fact, begun some studies in
25 looking at these alternates. We have discussed our
26 reaction to the Sheep Mountain situation for instance. We

1 have discussed reaction to the Ibex Pass situation.

2 From my perspective, in terms
3 of the involvement of interested parties, interested
4 government agencies, I would personally not be adverse to
5 receiving suggestions from such groups and agencies as what
6 they would consider a rational or acceptable or possible
7 alternate.

8 We are currently in the
9 position that we are defining the route on the basis of
10 what information we have, on the basis of what information
11 we are collecting and on the basis of project perspective.
12 But as I mentioned, we are not adverse to receiving
13 suggestions. For instance, from your own agency in par-
14 ticular areas.

15 MR. ROMAINE: Just going on
16 with the point where you reach, you mentioned that we
17 would review your final design for approval. Two, one
18 on those areas where you have a relatively firm alignment,
19 that is, there hasn't been that much concern about the
20 proposed alignment at this stage; and two, in those areas
21 where you do have realignment, we dealt with some problem
22 areas, what is, sort of the time frame for both of those
23 where you'd expect to reach a point of requiring approval
24 on the final design, say from this point on?

25 MR. BOUCKHOUT: Final design
26 approval for a particular construction segment or spread

1 would be necessary in time frame on the order of three
2 to six months prior to beginning of construction in that
3 segment.

4 MR. ROMAINE: Three to six
5 months. So from-- assume you had a green light or approval in
6 principle at least, to pursue that, what are we looking at
7 in terms of time frame from this point?

8 MR. BOUCKHOUT: Well, given
9 that our current schedule contemplates beginning of con-
10 struction in the summer of 1979, initial final design
11 approvals for those segments which are to be constructed
12 during that summer, which entails a total of two hundred
13 miles or in that order, would therefore be required some-
14 time early in 1979.

15 MR. ROMAINE: Thank you. The
16 other point that I wanted to raise under this section,
17 again for clarification, as you recall, I asked you a
18 question and you did given an answer, but I would like to
19 hear it again if you wouldn't mind.

20 That was that in view of the
21 discussion that we had yesterday on alternatives, your
22 position or whether you agreed that it would be difficult
23 at this time to come to grips with what the environmental
24 impacts for such problem areas might be and whether or not
25 an acceptable solution to meet all these concerns could
26 be found.

1 As I understand your answer
2 and again please correct me, but in essence, it said that
3 these questions can be resolved through design or something
4 to that effect?

5 MR. BOUCKHOUT: Mr. Romaine,
6 through the application of the various protection measures,
7 which we and other groups have been working on for some
8 six or seven years, this includes Mr. Templeton's group,
9 in response to the kinds of environmental implications and
10 concerns raised with respect to northern pipelining and
11 given the route we are currently talking about, I am
12 personally convinced as a biologist, these concerns can be
13 mitigated.

14 MR. ROMAINE: Okay. For what
15 degree of impact at this stage, have you got a feel for
16 what that might be.

17 MR. BOUCKHOUT: What degree
18 of impact?

19 MR. ROMAINE: Well, we've
20 had a fair amount of discussion about some of the problem
21 areas and I guess the point that I really want to get at
22 is, do you feel from your point of view at this stage,
23 that indeed there are impacts or will be impacts I guess
24 to --you perhaps have already stated it, but you're
25 really saying that with proper design, these impacts will
26 be certainly minimized? Is that correct?

Mr. Bouckhout
Mr. Romaine
Dr. Hughes

1876

1 MR. BOUCKHOUT: Yes, I think
2 they will be.

3 MR. ROMAINE: Okay. The next
4 area I'd like to get into Mr. Chairman, deals with some
5 general questions.

6 MR. CHAIRMAN: Before you do
7 that Mr. Romaine, possibly some of the panel have questions
8 on the substance of your discussion with Mr. Bouckhout.
9 Dr. Hughes has one.

10 DR. HUGHES: In this business
11 of final design and approval by segments, it seems to me
12 that it might be possible ~~that~~ you'd have scheduled certain
13 spreads for construction ~~say~~ in your first summer and
14 because of outstanding and unresolved environmental
15 problems, it may not be possible to get your approval in
16 time. But there may very well be comparable lengths of
17 other spreads, maybe even constituting half of one spread
18 and half of another, that would be -- over which there
19 would be little or no -- few or no contentious issues and
20 therefore -- just what kind of advanced approval would
21 you need to proceed with something like that, where it would
22 mean different disposition of equipment and materials?

23 MR. BOUCKHOUT: As you
24 indicate, Dr. Hughes, the implication there is primarily
25 one of scheduling and logistics. Certainly, the facility
26 is there, given the build-up in construction that for

1 instance, if one particular summer spread scheduled for
2 the first summer were in a state whereby we felt that
3 absolute final design could not be completed - this is
4 a hypothetical question - that construction could proceed
5 on another portion of the line, wherein such concerns were
6 not the case.

7 Perhaps Mr. Saker might have
8 something to add on that. Certainly as I mentioned,
9 there would be scheduling and logistics implications. I'm
10 not precisely sure from a construction point of view, what
11 lead time might be required in that respect.

12 MR. SAKER: Well, we think
13 we are flexible enough so that if such an event should
14 happen, that we can't do one spread, that we can call
15 another and change our summer routing or our summer
16 construction to some degree, but as for breaking the
17 spreads up when we're talking about a hundred miles and
18 doing fifty of one and fifty of another, again, it brings
19 in a contractors problem of then having to move his equip-
20 ment fifty miles from one section to the other which would
21 have a loss of time and an increase in cost to us I
22 believe.

23 But this is what happens
24 in looping as Westcoast could testify to, so that it's not
25 that large a problem that we don't think we could not
26 overcome Dr. Hughes if I'm answering you.

1 In other words, we think we
2 can change our summer of '79 to say summer of '80 and move
3 the summer of '80 to '79 and that was what you were asking
4 I believe.

5 DR. HUGHES: Yes, but I was
6 trying to get a handle on how far ahead you'd have to
7 realize that that change was necessary. It's a lot of
8 material being moved, machinery being moved. Presumably,
9 it would be more than -- you'd need more than the three
10 months that you mentioned previously.

11 MR. SAKER: There's more
12 than logistics. There's also the engineering that would
13 have to go into each of these sections.

14 MR. LAZERTE: Now that you've
15 got me squeezed in between the environmental and the
16 construction department here, I would like just in passing
17 the microphone back and forth, make one comment.

18 Certainly, some flexibility
19 is possible, but in our engineering department assessment
20 of this, I would just add that we have targeted our
21 engineering and our drilling and our geotechnical studies
22 as directed, to certain spreads for certain years. If we
23 were wanting to get the adaptability, it has been suggested
24 it might be necessary to put more manpower ahead so that
25 rather than doing your planning or your engineering a year
26 ahead or eight months ahead of a given spread, you might

Mr. Lazerte

Mr. Bouckhout

1879

1 have to say well, we're going to put more manpower on that
2 and we'll do it one year ahead and two years ahead if you
3 follow what I'm getting at.

4 DR. HUGHES: Thank you.

5 MR. CHAIRMAN: Following up
6 on that, could you tell me what actions the company would
7 take in the three to six months between design approval
8 and construction start. What's essential for the company
9 to perform in those three to six months?

10 MR. BOUCKHOUT: In particular,
11 requirements in that period would be the establishment of
12 the construction camps, the bulk of the clearing of the
13 right-of-way, movements - logistic movements of equipment
14 and pipe into the construction spread and the associated
15 stockpile sites. It may in fact, already be in the stock-
16 pile sites. Those kinds of activities in that space of
17 time.

18 MR. CHAIRMAN: So the right-
19 of-way clearing, you don't consider as part of the con-
20 struction - that is pre-construction activity?

21 MR. BOUCKHOUT: Yes sir. In
22 most cases, it would be pre-construction activity. I
23 think we have mentioned the fact that in certain sensitive
24 zones, that it would precede construction by a very short
25 time. In other areas, it may precede construction by
26 several months.

1 MR. CHAIRMAN: Thank you.

2 Any other questions from the panel? No. Okay, are there
3 any other -- Mr. Templeton, do you have any questions on
4 the substance of that discussion or panel staff? No.

5 Okay, next topic Mr. Romaine.

6 MR. ROMAINE: Okay, just
7 before we leave this section on process and timing, Mr.
8 Myer has a question on it.

9 MR. MYER : This is a
10 supplementary question on the issue. You've described,
11 Mr. Bouckhout, a process of integration of concerns and
12 duties if you like, as you go along. Some of them are
13 environmental, some of them physical in nature.

14 With regard to the environmental
15 problems, tasks, et cetera which are the subject of this
16 hearing, are there any of them that appear on your critical
17 path. Now, I'm talking about the critical path overall
18 for the project.

19 MR. BOUCKHOUT: I'm not sure
20 Mr. Myer , that I precisely understand your question.

21 MR. MYER : I could amplify
22 it a bit if it would help.

23 MR. BOUCKHOUT: Please.

24 MR. MYER : I think that you
25 suggested, if not explicitly by implication, that many of
26 these environmental tasks will be ongoing and will be input

1 into your decision and design as you proceed.

2 I guess at the same time, there
3 has been some concern that some of at least, on the side
4 of the environmental interveners, that some of these
5 decisions might be of sufficient magnitude that if in-
6 correctly made and needing reversal, could cost you time
7 in the project or in fact, once made, couldn't be reversed
8 in the case for instance of a pipeline routing or something
9 like this.

10 What I was searching for
11 obviously, the majority of the questions that have been
12 raised might reasonably be resolved in some reasonable
13 manner. Are there any environmental issues at this time
14 which in that sense that you have to know before you, in
15 your plan as you now lay it out before you go a certain
16 way down the road, are there any of those decisions that
17 you have identified as being critical to your overall
18 scheduling?

19 MR. BOUCKHOUT: I'm still
20 not sure/^{that} I understand, but I'll try. We consider that
21 on the basis of the project as proposed, on the basis of
22 the information and on the advice of our consultants, and
23 given the current schedule, that there will be adequate
24 information on environmental grounds to make final design
25 decisions in the projected course of final design planning.

26 Now, in terms of what that

1 might mean, there is always a course of contingency which
2 we've already discussed here briefly, I think additionally
3 a course of contingency might be to adopt and institute
4 measures which one might feel overly conservative, but
5 additionally feel necessary in particular instances where
6 complete confidence is not possible.

7 MR. MYER : Thank you. I
8 appreciate that and if I just might follow this one step
9 further. You told us of course before, that you feel your
10 preparations to date are proceeding adequately.

11 MR. BOUCKHOUT: That's correct.

12 MR. MYER : Then you've gone
13 on to suggest that where there are critical concerns and
14 data is less than complete, you have a -- you can build in
15 a safety factor or a contingency plan.

16 I guess what I was seeking
17 for was an -- not a statement on adequacy, as much as
18 an identification of any key environmental issues that you
19 think are critical to your scheduling. Consequently, you
20 either have to build in these types of contingencies on
21 or if you haven't and found you were wrong, would have to
22 go back and consequently, incur costs and time, et cetera.

23 MR. BOUCKHOUT: Mr. Myer,
24 given the stage we're at today, I cannot foresee any of
25 the concerns which have been expressed which cannot be
26 confronted in the scheduling. Where we in some of these

Mr. Bouckhout
Mr. Myer
Mr. Romaine

1883

1 instances at the same stage next year this time, I think
2 I might have an entirely different answer.

3 MR. MYER: So at the moment,
4 you see no need to begin to build in contingency at present?

5 MR. BOUCKHOUT: Well I think
6 as we've already mentioned, contingency is built into the
7 program, it is a rather flexible program which will be
8 undertaken in most cases, in a conventional manner.

9 MR. MYER: Thank you.

10 MR. ROMAINE: Mr. Chairman,
11 we will get on with our more general questions, one of them
12 perhaps is still a bit specific, and still dealing with
13 the whole question of alternatives and the process of
14 consultation that you outlined, kind of a specific question
15 in a way, but I guess the general principle related to
16 alternatives. The question of alternative modes aerial
17 versus buried on stream crossings has come up and a number
18 of important or crucial extreme crossings have been
19 identified.

20 In identifying options - I'll
21 use that word - will you be also looking at alternative
22 modes aside from alignments?

23 MR. BOUCKHOUT: Mr. Romaine,
24 the project is based on a conventional buried mode. We
25 would only consider alternate modes if absolutely
26 necessary in a particular area.

1 MR. ROMAINE: I see. How
2 will you determine if it's absolutely necessary. Will this
3 be on consultation with other agencies or how will that
4 be achieved?

5 MR. BOUCKHOUT: It will be
6 based primarily on our initial assessment of site-specific
7 situations. I cannot personally foresee any necessity to
8 move as you mentioned, from a buried mode for instance,
9 to an above-ground mode at a river crossing. I base my
10 answer partially on the experience of Alyeska and fisheries
11 biologists including Mr. Roberson who was here and his
12 assessment that ^{the} buried mode was in fact, feasible and could
13 be done within acceptable environmental constraints.

14 MR. ROMAINE: My other
15 question deals with - and you've mentioned it in general
16 terms, the need for consultation - and you outlined your
17 process from here, so the question is really, how will you
18 meet your responsibilities and perhaps more importantly,
19 from an environmental point of view, how can you ensure
20 that these will be met? Could you expand on that a bit
21 or if you want clarification, I'll provide that as well.

22 MR. CHAIRMAN: Before you
23 answer, I'd like to inquire into our quitting time and
24 what do you forecast in terms of time, Mr. Romaine?

25 MR. ROMAINE: It depends
26 obviously, on the length of time for answers on the rest

1 of it, but I would say two or three more questions, and
2 then a summary statement. 10:30 looks fairly good.

3 MR. CHAIRMAN: Continue.

4 MR. ROMAINE: My question was
5 basically in regards to your environmental responsibilities.
6 How will you ensure that these are met?

7 MR. CHAIRMAN: Excuse me. I
8 don't quite understand the question.

9 MR. ROMAINE: Well basically,
10 what I'm after here I guess, is to get some feeling again
11 for process and we've heard discussion before on the
12 actual construction of it.

13 I was really looking for
14 answers with respect to perhaps some of the stipulations
15 that may be built in to the system, to the contractors or
16 whatever.

17 MR. BOUCKHOUT: I think
18 essentially Mr. Romaine, the proof will be in the pudding.
19 We will provide final design and final design documents
20 for all areas. Within those final design documents/^{there} will be
21 environmental plans, environmental mitigative measures.
22 Those will be available for scrutiny to the authorizing
23 agency.

24 In that respect, we would hope
25 that they would concur with our assessment and our
26 establishment of appropriate measures to mitigate

1 environmental impact. The ultimate authority then is going
2 to be the regulatory agency, be it the National Energy
3 Board or whatever.

4 MR. ROMAINE: Okay, thank you.
5 Just a final question with two or three parts to it. It's
6 a general question, I'm not really sure where to direct it,
7 but it really relates to the whole question and the mechanism
8 of the process. It's not really clear at this stage, as
9 to who determines such things as the guidelines for carrying
10 out future studies, to fill data gaps and to assess the
11 impact, how our problems at the place evaluate it. Questions
12 again related to the review perhaps from our point of view
13 of stipulations and the whole question of guidelines or
14 procedures for protection regulation and monitoring.

15 MR. CHAIRMAN: I think I'd
16 better have a kick at that.

17 The Environmental Assessment
18 and Review process is a process utilized within the
19 Federal Government. The Minister in charge of the Federal
20 lands in this case has asked the Federal Environmental
21 Assessment Panel to review the application.

22 We are issuing an interim
23 report and the Environmental Assessment Panel will carry
24 on if in fact, if the proposal is still in the running
25 after Mr. Trudeau and Mr. Carter make up their minds in
26 September.

1887

1 The activity of an Environmental
2 Assessment Panel is to give the government an opinion on
3 the acceptability - environmental acceptability of a project
4 to recommend mitigation measures, recommend timing and
5 really make any recommendations pertinent to environmental
6 impacts.

7 The Minister responsible, in
8 this case, the Honourable Warren Allmand, is then
9 responsible for implementing those recommendations. In
10 this case as well as Warren Allmand and the Territorial
11 Lands Act, there is the National Energy Board and they are
12 also responsible for making decisions on the implementation
13 of the project, including mitigation measures.

14 The two Ministers responsible
15 for the two Acts would have to get together if there is
16 any conflict in the mitigation measures.

17 Who then is responsible for
18 carrying on the next steps, obviously it is up to the
19 government to decide whether or not the proposal is still
20 viable and if it is, it's up to the Environmental Assess-
21 ment Panel to recommend on mitigation measures. In
22 recommending on whether or not the project is viable from
23 an environmental point of view and on mitigation measures,
24 the Environmental Assessment Panel will likely require
25 further information.

26 So the process is within the

1 panel from this hearing's point of view.

2 MR. ROMAINE: Thank you.

3 I'll then move on to our summary statement and it reads as
4 follows:

5 It should be clearly pointed
6 out at this time, that an over-riding concern relates to
7 the outside data deficiencies associated not only with
8 the Foothills' application, but also with geographic areas
9 and resources along the route in many instances.

10 Filling of these data gaps
11 can only be overcome by future investigation. Irrespective
12 of the question as to who fills these gaps is clear that
13 from a fisheries and a wildlife point of view alone, if
14 such studies were to commence immediately, a minimum time
15 period of one year is required to adequately cover only
16 one year's seasonal variation. That's minimum time period
17 for intensive studies.

18 Additional time for climatology
19 and hydrology, for example, relating to such questions as
20 drainage disruption and scour depth, would obviously be
21 needed to obtain more specific information, not only on
22 seasonal variations, but also on particular problem areas.
23 Once such information were available, additional time would
24 be required to relate this data to the assessment of
25 environmental impact, whatever the proposal might be,
26 to incorporate this knowledge into an environmental design

1 of the proposed pipeline and to establish necessary
2 mitigation or remedial measures.

3 With respect to the time
4 frame, I think that it's probably apparent, but not in all
5 cases does more manpower solve a problem. As you are
6 aware from many environmental parameters, they just do not
7 react to external ecologically independent time frames.

8 With respect to sort of two
9 other or three other summary statements, we've heard over
10 the last number of days, a complexity of issues and the
11 problems we've raised now on the compressed time frame and
12 the time required to collect information, the obvious, the
13 commitment of time to various phases and facets, particu-
14 larly including the design of the program. If that point
15 I think is worth noting, you've had one suggestion put on
16 the floor in terms of mechanisms.

17 I think that we would like
18 to say that there are probably a number of options of
19 mechanisms that should be considered. Two final points.

20 One relates to some of the
21 issues that have been discussed to date. The issue of
22 permafrost was discussed at length. From our perspective
23 again, our concerns relate to drainage disruption and the
24 effects that that may have on fisheries and wildlife. I
25 think also that it may be a valid observation that we as
26 a department, represent only a small fraction perhaps of

1 the concerns with terrain that has permafrost problem or
2 concern.

3 There is probably a number
4 of other agencies that would also have input to that. The
5 point being that it is not really clear in view of the
6 proposed changes and alternatives there, whether perhaps
7 such issues as this, have been adequately identified in
8 terms of their magnitude and whether or not the whole
9 issue has been correctly assessed at this time.

10 As a final point, we would
11 like to make in terms of the future process, obviously,
12 whatever evolves if it appears that the project is to go
13 ahead, this will place a burden beyond the capability
14 of regulatory agencies at this time.

15 Thank you Mr. Chairman.

16 MR. CHAIRMAN: Thank you.

17 Does the panel have any comment on that closing statement
18 of Mr. Romaine? No. Mr. Templeton, do you have any
19 comments? Mr. Bouckhout?

20 MR. BOUCKHOUT: Just one
21 very brief comment Dr. Hill and that is that I think
22 perhaps some people appear to have considerably less
23 confidence in the predictive capability of biologists and
24 other environmental specialists, than I appear to have.

25 MR. CHAIRMAN: Is that your
26 closing word?

1 MR. ROMAINE: We have kept
2 our promise by ten minutes in fact. There was one point
3 I wonder if we could raise on one of the other issues that
4 came up this afternoon I believe it was, that Mr. Myer
5 would like to address.

6 MR. CHAIRMAN: Two minutes,
7 how is that Mr. Myer?

8 MR. MYER: That's right.
9 In utter response, the biologists credo is know thyself.
10 Anyway, this point was not in summary, Mr. Chairman, because
11 it took place today and after we had an opportunity to
12 discuss what summary comments we wanted to leave with you.
13 It is, however, we believe, of major importance and we
14 would like to re-emphasize it for that reason.

15 It concerns the choice or
16 your deliberations with regard to the choice of power
17 source which we touched on briefly earlier. To the degree
18 that one examines a hydroelectric project as an adjacent
19 component of this development, the magnitude of impact
20 that we who are responsible for fisheries resources and
21 in fact, I suspect our colleagues who are responsible for
22 wildlife dependent on valley bottoms, are talking about,
23 is something in the order of several times any of the
24 impacts that we have been discussing today.

25 I believe that is a fair
26 generalization to make. We would therefore advise, or if

1 you like, urge the committee in these deliberations, to
2 seriously consider the ability to generate project power
3 from onlying gas, rather than from alternative hydroelectric
4 development. Thank you.

5 MR. CHAIRMAN: Any comments?

6 Mr. Bouckhout?

7 MR. BOUCKHOUT: No sir.

8 MR. CHAIRMAN: Any comments
9 from the panel? Then we'll adjourn until 1:00 o'clock
10 tomorrow afternoon and we will start discussion on the
11 Dempster lateral.

12 (PROCEEDINGS ADJOURNED).
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Environmental Assessment Review

Panel July 11, 1977

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GOVT PUBNS

ENVIRONMENTAL ASSESSMENT REVIEW PANEL

IN THE MATTER OF AN APPLICATION BY FOOTHILLS PIPE LINES (YUKON) LTD. TO THE MINISTER OF INDIAN AFFAIRS AND NORTHERN DEVELOPMENT FOR A GRANT OF THOSE INTERESTS IN THOSE AREAS OF TERRITORIAL LANDS IN THE YUKON TERRITORY AS MAY BE NECESSARY FOR THE CONSTRUCTION AND OPERATION OF THE SAID NATURAL GAS PIPELINE AND THE WORKS AND FACILITIES CONNECTED THEREWITH AND INCIDENTAL THERETO,

AND

IN THE MATTER OF A PANEL TO REVIEW THE ENVIRONMENTAL ISSUES RELATED TO THE PROPOSED ALASKA HIGHWAY GAS PIPELINE.

THE CHAIRMAN: DR. H. M. HILL

MEMBERS:

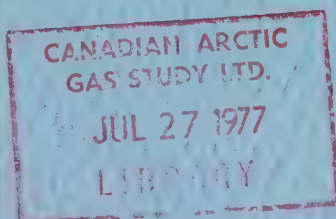
DR. O. HUGHES
MR. L. CHAMBERS
MR. B.J. TREVOR
MR. C. WYKES
DR. D. LACATE

PROCEEDINGS

VOLUME 10

WHITEHORSE, Y.T.

JULY 12th, 1977



VOLUME 10, July 12, 1977.

ALTERNATIVE PIPELINE CORRIDORS:

Mr. Parkinson	1895, 1907, 1912
Dr. Hughes	1900
Mr. Wykes	1902
Mr. Jenkins	1905, 1910
Mr. Trevor	1909
Mr. Hernandez	1912

IMPACT ON FISH:

Mr. Jenkins	1912, 1921
Mr. Hernandez	1916
Mr. Klassen	1917
Mr. McNally	1918
Mr. Parkinson	1919

WILDLIFE:

Dr. Guthrie	1925, 1940
Mr. Parkinson	1925, 1939
Dr. Hughes	1932, 1935
Mr. Klassen	1933, 1945
Mr. Wykes	1934
Mr. Retfalvi	1937
Mr. Hernandez	1949

VEGETATION COMPONENT:

Dr. Mathews	1952
Dr. LaCate	1959
Mr. Wykes	1960
Mr. Wahl	1961, 1964
Mr. Bouckhout	1964
Dr. Rickter	1965
Dr. Vaartnou	1965
Mr. Trevor	1969
Dr. Schilder	1970

343.093
E56 F58
Vol. 10



GEOLOGY:

Dr. Rickter	1974, 2003
Mr. Parkinson	1974, 1989, 1992, 2004
Dr. Hughes	1979, 1985, 2000
Mr. Ellis	1990, 1995
Mr. Romaine	1990
Mr. Lyons	1995, 1998
Mr. Bouckhout	1998, 2003
Mr. McNally	1998
Mr. Hernandez	1999
Mr. Templeton	2001
Dr. Schilder	2002
Mr. Smith	2004

PRESENTATION BY MR. NOWLAN:

	2006
Mr. Trevor	2009
Mr. Templeton	2010

HYDROLOGY:

Mr. Parkinson	2010
Mr. Smith	2010, 2022
Mr. Lyons	2018, 2021
Mr. Surrendi	2019
Mr. Bouckhout	2020
Mr. Kosten	2020
Dr. Rickter	2025
Mr. Yewchuck	2026

DEMPSTER LATERAL:

Chief Kaye	2028
Mr. Trevor	2042
Mr. Wykes	2044
Dr. Hughes	2044, 2083, 2090, 2092
Mr. Njootli	2045, 2053, 2064
Mr. Klassen	2049, 2052, 2064

DEMPSTER LATERAL CONTINUED:

Mr. Bouckhout	2050, 2065, 2078, 2099
Mr. Burrell	2050
Ms. Archibald	2051
Dr. Schilder	2053
Mr. Parkinson	2054, 2082
Mr. Crum	2057, 2073
Dr. Hoefs	2065
Mr. Templeton	2066
Mr. Romaine	2076, 2084, 2094, 2097
Mr. D. Surrendi	2078, 2084, 2097
Mr. Wahl	2090
Mr. Lister	2094
Mr. Stein	2094
Mr. McNally	2096
Mr. C. Surrendi	2098

Whitehorse, Yukon Territory.

July 12, 1977.

(PROCEEDINGS RESUMED PURSUANT TO ADJOURNMENT)

MR. CHAIRMAN: May we please come to order. Last night we finished hearing information on the proposal as put forward by Foothills (Yukon) Limited to build a pipeline along the Alaska Highway. Part of our terms of reference as a panel are to hear information that anyone would like to present to us on alternative routes within the Yukon and the possibility of a lateral along the Dempster Highway to bring Mackenzie Valley gas to the proposed mainline through the southern Yukon.

We should, I think, we must change our procedure somewhat for this phase. What I'm proposing is that each advisor advises us in rotation on their concerns about the alternatives within the southern Yukon and the Dempster link. Foothills, if they wish, may defend their proposal in the face of alternatives to go along the Alaska Highway, and if they don't wish to, that's fine also.

However, we would like the advice of Foothills in this discussion. So, we'd like to include them as part of our advisors.

We do not--we understand the situation we're in as a panel. We will be hearing information on a very, very preliminary basis, but we would like the advice of all those who had wished to advise us. We were informed that Chief John Joe Kaye from Old Crow wishes to address the panel today on the Dempster link issue. Is Chief John Joe Kaye here? No, well I would suggest then that we continue with the evaluation of the southern alternatives.

The firm was hired on the initiative of the panel, but in fact the analysis undertaken by Envirocon was Envirocon's analysis and we, as a

1 panel, have remained at arm's length from Envirocon.

2 So, I believe in order to
3 get proceedings underway, I would ask Mr. Parkinson to
4 introduce their analysis, how they went about it and
5 what their conclusions are.

6 MR. PARKINSON: Thank you,
7 Mr. Chairman. I will introduce this subject just by
8 reading from a prepared introductory statement.

9 Envirocon Limited was
10 retained by the Environmental Assessment panel to provide
11 an independent, comparative, environmental evaluation
12 of the obvious alternative pipeline corridors at the
13 overview level based on available information.

14 The corridors dealt with
15 in the comparison were specified by the panel in general
16 terms to be the so-called Klondike corridor, the Tintina
17 Trench corridor and the Alaska Highway corridor. Within
18 the Tintina Trench, two alternatives are apparent at
19 the lower end, the Robert Campbell Highway and the Liard
20 Valley.

21 These corridors are indicated
22 by colour on the wall map. In this study, an attempt
23 has been made to compare potential pipeline corridors
24 in terms of important environmental components that
25 will give reliable indications of relative environmental
26 feasibilities and to discuss these components in support

1 of the ranking. To illustrate, the Alaska Highway
2 corridor encounters environmental concerns in the Ibex
3 Pass and Squanga Lake areas, and the Klondike corridor
4 encounters problems at Tatchun Creek.

5 Specific alignments in these
6 areas influence the environmental ratings of the corridors.
7 The alternatives are compared using the most favorable
8 rating for each. It must be emphasized that this study
9 has involved a comparison only and is not an environmental
10 impact assessment. Also, the assignment of preference
11 rankings to the corridors did not imply acceptance or
12 rejection of any corridor.

13 The rankings are tentative
14 at this time since additional relevant information may
15 develop during the course of the hearings which will be
16 incorporated in the overall comparison. A totally
17 objective approach for comparing the environmental
18 feasibilities of the alternative corridors is the ultimate
19 goal, but this is not attainable at this time largely
20 because of the inconsistent or incomplete data base,
21 and the fundamental dynamic characteristics of the natural
22 eco-systems.

23 Since subjective judgments
24 must inevitably form a significant part of the comparison,
25 the systematic approach was adopted in order to reduce
26 any subjective bias. The methodology selected is a modi-

1 fication of that used by the Alaska Highway Pipeline
2 panel. In this approach, the basic units for comparison
3 are selected and evaluated in a systematic way according
4 to a carefully preselected criteria.

5 In this manner, the evaluations
6 of a team of resource specialists are assembled into an
7 overall rating that can be used by decision makers.
8 The evaluation system selected for this study considers
9 the potential environmental effects of a pipeline on the
10 five basic components of land, water--land and water in
11 the physical environment; fish, birds and mammals and
12 vegetation in the biological environment.

13 Within each component, the
14 individual resource specialists selected parameters for
15 evaluation that appeared to comprise the bulk of the
16 total potential environmental **effects**. Basically, these
17 parameters were selected by an analysis of potential
18 interactions between project activities and the
19 environmental factor.

20 The analysis prepared by
21 Canadian Arctic Gas and the Department of the Environment
22 in their report series on the proposed Mackenzie Valley
23 Pipeline provided guidance for parameter selection.
24 Parameter selection criteria similar to those used by
25 the Alaska Highway Pipeline Panel parameters were established
26 for choosing the most significant parameters from the total

1 array available.

2 Generally, the criteria included
3 the broad areas of sensitivity to impact, importance to
4 eco-system function, significance to human values and
5 rarity. After selection of the parameters, each was
6 evaluated to the selection criteria and assigned an
7 importance rating. A group consensus approach was
8 used to assign value for the component and category levels.

9 Figure 1, which I have here,
10 shows the final hierarchical importance values. Each
11 major corridor was analyzed on a preselected systematic
12 basis. Each parameter was evaluated and an impact
13 magnitude score of zero for nil, one for low, two for
14 moderate and four for extreme was assigned. These
15 magnitude scores are an indication of risk to the resource,
16 not the likelihood of impact.

17 Thus, the rating assumes
18 potential impacts will occur and estimates the potential
19 unmitigated impact. Those parameters where impact is
20 expected to be directly related to length of the pipeline
21 were weighted by multiplying the impact magnitude by
22 the length of the segment under the valuation.

23 The components of fish
24 and hydrology do not fit a direct relationship of impact
25 to length. Modifications of the basic weighting system
26 to accommodate the special requirements of these disciplines

1 were devised. An environmental impact rating for each
2 parameter was obtained by multiplying the weighted impact
3 magnitude by the importance value assigned to that
4 parameter.

5 The final environmental
6 impact rating for each corridor was obtained by summing
7 the environmental impact ratings for all parameters.
8 Thus, the corridor with the lowest total environmental
9 impact rating is the preferred corridor and so on.

10 The existing data base for
11 impact evaluation was not equal for all corridors, with
12 much more data being available for the basic Alaska
13 Highway corridor. This could lead to a high or low
14 basis bias for the most studied corridor, depending on
15 the criteria used. To reduce any bias, the evaluation
16 team examined all routes at the aerial reconnaissance
17 level and used their onsite observations as the common
18 data base.

19 This was, of course,
20 supplemented by existing data. So, using the available
21 data base, the aerial reconnaissance and the methodology
22 outlined, the alternative pipeline corridors were compared
23 and given relative rankings as follows: The first ranking
24 was the Klondike corridor, that's the most preferred.
25 Secondly, was the Alaska Highway corridor. Thirdly,
26 Liard/Robert Campbell corridor. Fourthly, the Liard/

1 Tintina corridor.

2 That's the opening statement.

3 MR. CHAIRMAN: Thank you,
4 Mr. Parkinson. Before we get into the questions and
5 there are many, I suggest that we ensure that that paper
6 you passed out is available to everyone here. Maybe people
7 can share it, and I suggest also that anyone wishing
8 to have a look at the map--so, let's break for five or
9 ten minutes while people familiarize themselves with the
10 routes and ensure that they have access to figure 1.

11
12 (PROCEEDINGS ADJOURNED)

13 (PROCEEDINGS RESUMED PURSUANT TO ADJOURNMENT')

14
15 MR. CHAIRMAN: Could we please
16 reconvene. This evening at seven o'clock we will hear
17 from Chief John Joe Kaye of Old Crow. I'd like to ask
18 the panel now if they have any questions for Mr.
19 Parkinson. Dr. Hughes?

20 DR. HUGHES: Mr. Parkinson,
21 quite evidently the Tintina routes are a bit different
22 to the Alcan or Alaska Highway route and the Klondike
23 Highway route in that both have sections that don't at
24 present have all weather roads. Therefore, one might
25 perceive not only environmental effects coming from the
26 actual construction, but in the case of those segments

1 that don't have roads an increased measure of environmental
2 disturbance when repairs or contingency measures were
3 necessary to repair the pipeline, simply because there
4 was no road there. Is this reflected in your weighting
5 of environmental assessments for the segments, various
6 segments, of these individual routes?

7 MR. PARKINSON: Yes. In
8 looking at those particular areas, the factor of increasing
9 the accessibility by putting access in was taken into
10 account and is reflected in the figure.

11 DR. HUGHES: Well, there
12 are really two things there. One, that there would be
13 some level of access for skidoos and maybe even four wheel
14 drive vehicles, but there's the other factor that the
15 pipeline right-of-way itself would not necessarily provide
16 an adequate route to move heavy equipment in the case
17 of contingency repairs, and therefore, one might expect
18 some additional damage.

19 There are really two things,
20 aren't there? There's increased access and lack of
21 all weather access for emergency repair measures, and
22 does your weighting reflect both of these then?

23 MR. PARKINSON: The weighting
24 reflects more strongly the increased effect on the
25 environmental resource of increasing accessibility of the
26 area. Now, I think in all fairness, I would have to say

1 that we didn't as a factor look at going back in to,
2 as you say, repair the pipeline.

3 DR. HUGHES: So that if anything,
4 if that were to be given considerable weight, the advantage
5 of having an all weather highway close to the pipeline
6 route or the pipeline route close to the all weather
7 highway, if you were to give that factor some measure
8 of weight in this, that it would tend to make even sharper
9 the preference for the Klondike rather than for either
10 the Tintina Trench alternates?

11 MR. PARKINSON: Well, if an
12 all weather road was put through, the impact could
13 conceivably be significantly greater, because it in itself
14 is a major construction project.

15 DR. HUGHES: Right. I
16 thank you.

17 MR. CHAIRMAN: Mr. Wykes?

18 MR. WYKES: Mr. Parkinson,
19 I guess really what I'd like to do is kind of look back
20 into your work sheets in a little more detail. I'm
21 trying to relate the non-impact that you've taken on
22 either--you mentioned that neither the physical environment
23 nor the biological environment on your, I guess, figure 1,
24 the total number being 1000, was not considered in this
25 analysis. Is that the correct assumption, that you
26 didn't consider whether or not those parameters would be--

1 the mitigation measures and the magnitude of those that
2 would have to be put into place to balance them; is that
3 correct?

4 MR. PARKINSON: I'm not
5 quite sure I understand your question.

6 MR. WYKES: Okay. I guess
7 putting it on a comparative point of view, let's compare
8 the Klondike route and the Alaska Highway route which
9 were the first two on your ratings.

10 The physical environment,
11 the total number of points given to that was 318 and
12 for the biological environment was 682. In deriving
13 those numbers, did you consider what mitigating measures
14 might have to be put in place?

15 MR. PARKINSON: No, the
16 rankings represent the potential for unmitigated impact.

17 MR. CHAIRMAN: Excuse me,
18 to get this point cleared up. So the answer is, yes,
19 you considered that all mitigation measures would be
20 in place and, therefore, the residual is what you've
21 used, or did you consider that the numbers were given
22 before any mitigation measures would be put in place?

23 MR. PARKINSON: If you
24 refer back to the statement, the impact or the ranking
25 reflects the potential for unmitigated environmental
26 impact.

1 MR. CHAIRMAN: Oh, thank
2 you.

3 MR. WYKES: And then is it
4 correct to assume then for all the pipeline routes you
5 evaluated then that the physical environment is less
6 important when you do not think about mitigating effects--
7 is equally important for all routes and the biological
8 environment is all important. I'm just trying to get
9 some of your basic assumptions that were made here.

10 Before talking about
11 mitigation at all, those values were equal for all routes?

12 MR. PARKINSON: I think I'll
13 defer to the evaluation team to deal with these questions.
14 We're having difficulty just understanding the question
15 that is being put.

16 I'd like at this point to
17 introduce the team. On my left is Mr. Bruce Jenkins
18 who was responsible for the fisheries section. Dr. Don
19 Guthrie, wildlife. Dr. Carl Ricker, geology--Mr. Carl
20 Ricker, geology. Derek Smith, hydrology, and Dr. Rolf
21 Mathews, vegetation.

22 Now, your question dealt
23 with the mitigation aspects. Could you repeat that please?

24 MR. WYKES: I'm just trying
25 to find out some of the assumptions you've made to derive
26 your ranking at the end of the report, and the physical

1 environment was given 318, as a total, maximum 318 points
2 and the biological environment 682.

3 So that all pipeline alternatives
4 that you evaluated, you started with the same point rankings
5 for all parameters, irrespective of the mitigating measures
6 that might have to be put into place.

7 MR. JENKINS: I think the
8 important point that should be clarified before we answer
9 that question directly is that the physical environment
10 and the biological environment are basic categories or
11 divisions of the total environment, and they are then
12 broken down into component levels which you see in the
13 boxes below the categories.

14 Now, before we even considered
15 comparing the routes, we assigned a thousand points to the
16 environment and then based on a group consensus approach,
17 arrived at that breakdown of the total piece of pie, if
18 you will, to physical and biological and the various
19 components thereunder.

20 I want to stress that that's
21 before the routes were compared. So, at that level, when
22 those values were assigned, there was no consideration
23 of the amount of impact or the amount of mitigation, but
24 just comparing the relative importance in the minds of
25 the professionals that are part of the team of those
26 various categories and components in the entire or total

1 environment of the Yukon Territories.

2 After those relative weightings
3 have been assigned, then at the parameter level which aren't
4 designated in that hierarchy, impact magnitudes are
5 assessed and the relative routes are compared. But it's
6 important that you have a reflection of the relative
7 importance of the various categories and components of
8 the environment before you begin to compare impacts.

9 MR. WYKES: Okay, I believe
10 I understand, although I'm having trouble seeing how you
11 can put them on to a ranking if you do not evaluate
12 also the ease or the difficulty to implement mitigating
13 measures.

14 MR. JENKINS: Well, another
15 point we should make quite clear is that there is a
16 definite lack of data for most of the alternates. Most
17 of the data was along the Alaska Highway route. If we
18 used as much information that existed in the Foothills'
19 application for the Alaska Highway route, then we would
20 be biasing our comparison away from that route because
21 more of the sensitivities were known.

22 So, for that reason, the
23 weightings were assigned before comparison and we made
24 the very basic assumption that--well, we took the worst
25 possible case, if you will. We didn't consider mitigation
26 because we didn't have enough details about what construction

1 techniques or construction scheduling would apply to the
2 various alternatives. So, it was our decision that the
3 best approach would be to look at the worst possible case,
4 and we should make it clear that mitigation measures will
5 definitely reduce the total amount of impact for any
6 of the alternatives, whichever one is selected. The total
7 amount of impact can be reduced.

8 MR. WYKES: Okay, I understand.

9 MR. CHAIRMAN: Could you go
10 through your categories and tell us what your conclusions
11 are in comparison between the routes, geology, for instance,
12 as a topic; hydrology, mammals, fish, vegetation, birds?
13 Could you give comment on why--in general terms, what were
14 the major factors which caused you to rank one route
15 better or worse than another?

16 MR. PARKINSON: Yes, we will.
17 In doing this, one other point of clarification should be
18 mentioned and that is that we have looked at corridors
19 as opposed to actual routes quite simply because only one
20 of the alternatives that we were to look at has a route
21 drawn on it, so that flexibility is still retained within
22 the corridor for route alignment.

23 The Alaska Highway alternative,
24 the component rankings were as follows: The geology got
25 a 3 out of 4. Hydrology, 4. Fish, 4. Wildlife, including
26 birds, 4. I'm sorry, 1. Vegetation, 1.

1 MR. CHAIRMAN: Could you just
2 run through those again. I've fouled up my marking paper
3 here.

4 MR. PARKINSON: Okay.

5 Geology - 3
6 Hydrology - 4
7 Fish - 4
8 Wildlife - 1
9 Vegetation - 1

10 MR. CHAIRMAN: So, in terms
11 of your figure 1, mammals and birds go together to form
12 wildlife, is that correct?

13 MR. PARKINSON: That's
14 correct.

15 MR. CHAIRMAN: And is "1"
16 good or bad?

17 MR. PARKINSON: 1 is a
18 preferred route.

19 MR. CHAIRMAN: Okay. Thank
20 you.

21 MR. PARKINSON: Okay. The
22 same figures for the Klondike.

23 Geology - 4
24 Hydrology - 3
25 Fish - 3
26 Wildlife - 2
Vegetation - 4

For the Tintina/Liard Basin:

Geology -	2
Hydrology -	1
Fish -	1
Wildlife -	4
Vegetation -	1

The Tintina/Lower Robert

Campbell alternative:

Geology -	1
Hydrology -	2
Fish -	2
Wildlife -	3
Vegetation -	2

MR. CHAIRMAN: Fine. Could you comment on your geology rankings, for instance, 1, 2, 3, 4; what were the factors in making the Klondike route less desirable than the Alaska Highway route? Point of clarification, Mr. Trevor?

MR. TREVOR: Well, dealing with that detail, Mr. Parkinson, please, you indicated I think that "1" was most preferred and "4" was least?

MR. PARKINSON: That is right.

MR. TREVOR: And yet if we add those ratings together that you've just given us, it

1 works out the other way around, does it not, if you're
2 using point values?

3 MR. PARKINSON: I'm sorry,
4 who is going to speak here? "1" is the preferred ranking.

5 MR. JENKINS: Do you mean
6 adding the numbers that you were given, the ranking to get a total
7 value for each corridor?

8 MR. TREVOR: Yes.

9 MR. JENKINS: Yes. Well,
10 that's a mistake in the methodology at the very start.
11 You can't add those rankings together to arrive at a total
12 or to arrive at a final comparison. You had to compare
13 the alternative routes or corridors based on the
14 components only and we've ranked them accordingly and
15 we can justify the ranking of the alternatives at that
16 component level.

17 Then they were integrated
18 but not by adding the rankings because it would not
19 reflect the relative importance of the various components
20 if you just added the 1, 2, 3, 4 rankings.

21 MR. TREVOR: So you would
22 have to multiply by the figures used in the distribution
23 of importance values?

24 MR. JENKINS: No, we didn't
25 multiply the weighting figures, the importance figures
26 in that hierarchy times the ranking numbers 1, 2, 3, 4.

1 We used our impact magnitude scores that were assessed
2 for each route and they were weighted by those weighting
3 parameters in the table you have in front of you.

4 MR. CHAIRMAN: Could you run
5 through that again.

6 MR. TREVOR: You lost me on
7 that one.

8 MR. CHAIRMAN: Start with,
9 for instance, the Alaska Highway. Exactly what did you
10 do with the "3" in geology before you added it together
11 with the other factors?

12 MR. JENKINS: The "3" in
13 geology wasn't added together. The source of confusion
14 here is the ranking of the corridors based on just the
15 components, just based on geology, fish and vegetation.
16 The ranking that you just received is a point of
17 clarification so that we can then pursue the justification
18 for the ranking by each component. All right, but that
19 ranking at the component level was not used to come to
20 a final ranking of the alternatives.

21 The numbers that were used
22 to arrive at that final ranking were, in fact, our raw
23 impact magnitude scores and our more detailed assessment
24 at the site specific level.

25 MR. CHAIRMAN: Okay, fine.
26 So, these are just telling us that in your opinion the

1 Tintina/Robert Campbell is the most preferred for geology.

2 MR. JENKINS: Only.

3 MR. CHAIRMAN: Followed by
4 Tintina/Liard, followed by Alaska Highway, followed by the
5 Klondike, and then after we get through asking the
6 question why, we will ask how you came to your scores.

7 MR. JENKINS: That's right.
8 This breakdown by component makes it easier for any
9 questions from the floor to address a particular discipline.

10 MR. HERNANDEZ: Could I just
11 ask a question? On the specification, when I look across
12 the table, I see two 1's, a 2 and a 4. Where's the
13 3?

14 MR. PARKINSON: I thought
15 you'd never ask. I gave you some wrong figures for that
16 of vegetation. The Alaska Highway should read 1; Klondike,
17 4; Liard/Tintina, 3; Robert Campbell, 2.

18 MR. CHAIRMAN: Okay. Now,
19 could you go through--turn the numbers into physical
20 or a biological description of the reasons behind your
21 rankings?

22 MR. JENKINS: Sure. While
23 I'm here then I might as well deal with fish first and
24 then we can either receive questions from the floor or
25 we can carry on with the other disciplines. It doesn't
26 matter.

1 The first important point
2 about the fish resources along the routes are that they
3 couldn't be--the basic assumption that impact magnitude
4 is proportional to linear distance of a particular
5 alternative, that's false for fish. You can't accept
6 that basic assumption.

7 So, right at the very
8 beginning we were presented with some methodological
9 problems. We decided as an alternative to proceed with
10 the assessment of impact magnitude for each alternative
11 on the basis of stream crossings along each alternative.

12 The ranking of the alternatives
13 for fish in fact turns out to be the directly opposite
14 to what the final ranking was and there's a very good
15 reason for that. It's indicated by the importance values
16 that are assigned to the various components which was
17 a group consensus.

18 Now, the basic reasons
19 behind the ranking for fish are directly related to the
20 amount of fish habitat that is potentially subject to
21 impact by pipeline construction and operation along a
22 particular corridor. So, if you just compare the
23 grossest level, the number of stream crossings which
24 would include seasonal flow, channels that just have
25 seasonal flow all the way through to major rivers, you
26 compare the number of stream crossings, you have a good

1 gross comparison of the routes, and it is reflected in this
2 final comparison.

3 The worst corridor for fish
4 based on this assessment, is the Alaska Highway and the
5 reasons for that are it has the most number of stream
6 crossings, it has a number of site specific sensitive
7 areas with regard to commercial and domestic fisheries,
8 areas of scientific interest like Squanga lake where the
9 two forms of whitefish are. Those kinds of considerations
10 were taken into account coming up with a final
11 comparison.

12 But at the grossest level
13 it's based on the amount of habitat that's subject to
14 impact. We made an attempt after that comparison to
15 look at the particular habitat; i.e. the streams that
16 would be crossed or paralleled and assessed its relative
17 sensitivity. This is based on a parameter breakdown
18 considering overwintering habitat, known or expected based
19 on observations and comparison with other streams. It's
20 based on spawning habitat and it's based on summer
21 habitat, which is an attempt to reflect all of the life
22 history aspects of the various fish populations within
23 the Yukon Territories.

24 After assigning these
25 relative sensitivities along each alternative corridor,
26 the sensitivity values or impact magnitude scores were

1 tallied up and compared and the same ranking of corridors
2 was arrived at.

3 As I say, this shouldn't
4 be surprising because the more fish habitat that is
5 potential--that is likely to be disrupted by pipeline
6 activity, then the greater the potential impact. That's
7 the basic assumption that's made for the fish component.

8 So, the final ranking for
9 fish was--Alaska Highway was least preferred. The Klondike
10 was the next. Then Robert Campbell and then the most
11 preferred route was the Liard/Tintina. Now, involved
12 in that consideration were such aspects as sensitivity
13 of a particular habitat to disruption. For instance,
14 overwintering habitat is much more sensitive. The amount
15 of impact that you could expect associated with the fish
16 populations in an overwintering habitat could be much
17 more severe and intense than say a seasonal summer habitat
18 for a number of very important reasons.

19 It also took into consideration
20 increased access and resource utilization. So, the
21 basic impacts that were used as indicators in assessing
22 the impact magnitude took into account habitat alteration
23 and enhanced resource utilization or resource use. So,
24 that's the final ranking for the fish component.

25 MR. CHAIRMAN: Any questions
26 on that description of comparative effects on fish?

1 Firstly, among the panel? I think probably the best
2 way to handle this is to ask any of our other advisors
3 to ask questions of clarification so that we're all in
4 the same level of knowledge or ignorance on your
5 analysis. Does anyone wish to ask a question of
6 clarification on the analysis concerning fish?

7 MR. HERNANDEZ: Yes, I'd
8 like to ask for fish and it applies to all of the
9 others. What relative difference that you use in your
10 total score when you arrived at your 1, 2, 3, 4 ranking
11 to decide its significance as between a 4 and a 3? Like
12 if the total for fish of one route was 433 and the total
13 for another route was 432, did that mean that they were
14 a 4, 3 order or is that the way it was arrived at?
15 Did you decide that a ten point magnitude is the
16 difference?

17 MR. JENKINS: No, the
18 final ranking of the corridors for the fish component
19 are based on the absolute weighted impact number. Right?
20 There's no significance levels attached to those numbers.
21 All right, if the final number was similar, then in the
22 discussion of the fish component that would be pointed
23 out. All right, so it is quite true that two of the
24 alternate corridors--it's a tossup.

25 MR. CHAIRMAN: All right,
26 Mr. Klassen.

1 MR. KLASSEN: When you were
2 considering the Klondike route, did you only consider the
3 distance from the Alaska/Yukon border near Dawson City
4 and then down to its junction with the Alaska Highway?
5 You mentioned that the Alaska Highway in connection with
6 fish was not preferred because--one example you used was
7 Squanga Lake.

8 On that map, the Klondike
9 route would also take in Squanga Lake.

10 MR. JENKINS: That's true.
11 The Klondike route is the blue route marked on the map
12 on the wall and it includes a sixty mile segment from
13 Dawson City, west to the Alaska border, down the
14 Klondike Highway and then picks up the lower portion of
15 the Alaska Highway route.

16 So, a point of clarification;
17 the fact that you have two unique forms of whitefish
18 in Squanga Lake was not the only basis for the low rating
19 for the Alaska Highway alternative.

20 MR. KLASSEN: Although fish
21 aren't specifically my concern, but it was an example
22 that you used to indicate impact of the Alaska Highway,
23 and it would be the same for the Klondike and I was
24 just wondering where you cut the Klondike route off
25 in your consideration.

26 MR. JENKINS: The Klondike

1 route was the entire route from border to border. So, as
2 I say, it included the lower portion of the Alaska
3 Highway and it would take into account the impact
4 considerations for that section.

5 MR. KLASSEN: Thank you.

6 MR. CHAIRMAN: Mr. McNally?

7 MR. MCNALLY: Just a couple
8 of questions, and a comment as an introductory one.
9 First off, with reference to the alternates that are
10 shown on the board, I just have one suggestion for an
11 alternate which really isn't covered, but from a fisheries
12 viewpoint becomes rather critical and that's making
13 a tie from Carcross through to Ross River, and I notice
14 it has not been addressed--or Carmacks, sorry, Carmacks
15 to Ross River; from Carmacks through to Ross River.
16 I notice it's not indicated on it.

17 As a touch of expansion the
18 reason it's important, the Stewart Crossing to Ross
19 River section through the trench is extremely high on
20 fisheries values, and from that sense, it's an automatic
21 choice to start looking towards following the highway
22 from Stewart Crossing to Carmacks, Carmacks to Ross
23 River.

24 I would at this time very
25 much like to identify that as a very viable alternate
26 that should be addressed. I recognize that it throws a

1 bit of a monkey wrench into the initial choices, but if you'll
2 accept my rationale for the extremely high values within
3 that section I identified, I believe it's worth addressing
4 at this time.

5 MR. CHAIRMAN: Would you like
6 to comment on that alternative? Possibly you could
7 describe how in fact you chose your alternatives? There
8 must have been hundreds of possibilities.

9 MR. PARKINSON: One of the
10 limiting factors in selecting the alternatives that would
11 have ultimately been compared was the time available to
12 do it, and that particular alternative is some few miles
13 longer than the one straight through, and if we put that
14 in, then we get another round in the permutation and
15 combinations of sections that have to be looked at.
16 As that one fell slightly outside the terms of reference
17 that we had, and on the basis of just a subjective
18 evaluation at the very beginning, we did not include
19 it.

20 MR. CHAIRMAN: Okay. Any
21 other points of clarification on the fisheries comparison
22 between the three routes? Mr. McNally?

23 MR. McNALLY: Actually I
24 have a couple, if it's in order. With reference to the
25 basic assumption that was introduced that lineal distance
26 was not proportional to the magnitude of impact with reference

1 to the initial routes, it's fair , it's a fair comparison,
2 and it's a useful tool to compare the alternate routes.
3 The only part where it gets a little bit out of context
4 is if you look into the future where you start including
5 the Dempster lateral.

6 Then it makes the comparison
7 a little bit rougher in my mind. You would then, looking
8 in the broad term, you would be looking at are we
9 addressing an Alcan Highway now and then a Dempster in
10 the future and then are you looking at some combination
11 of the two; and if you look in gross routing, it becomes
12 a little more awkward where you say okay, we're going
13 to take either the Alcan or the Klondike or whichever
14 combination and then tie the Dempster into it, it makes
15 the Alcan corridor very much--even more less desirable
16 if you have the Alcan and then the Dempster, plus any
17 combination coming down the Klondike.

18 MR. CHAIRMAN: Yes. In
19 addressing the issue of alternates, what we've done is
20 said that there really are two possible objectives
21 involved here. One objective is to move Alaskan gas
22 south and let's look at the alternatives to do that
23 in the southern Yukon. Another objective is to move
24 Alaska gas and Mackenzie Valley gas south.

25 So that one cannot logically
26 include the Dempster in the first objective. So, it becomes

1 an outlier, if you like, in the analysis in the Yukon.

2 MR. MCNALLY: Understood.

3 The unfortunate part from the fisheries point of view
4 is that because they do overlap, then it becomes quite
5 critical.

6 MR. CHAIRMAN: Yes.

7 MR. MCNALLY: Just another
8 quick point. It was identified that spawning habitat
9 and rearing habitats are used as mechanisms for identifying
10 values and I just wondered if we might have a touch of
11 expansion or a qualification on the data base that was
12 used.

13 MR. JENKINS: The basic
14 assumption at the beginning is a data base is not only
15 inconsistent between corridors, but there's also very
16 little of it in a general sense for the entire Yukon
17 Territories with the possible exception of the Alaska
18 Highway corridor, although there's some debate about
19 that as well.

20 I think, as I mentioned,
21 our first assumption then was that we could not fairly
22 compare alternatives by only considering all the
23 documented information and personal communications
24 with fisheries representatives. So, that was one of the
25 reasons that we decided to opt for those parameters of
26 fish habitat as opposed to fish species which were used

1 in the Alaska Highway Assessment Panel.

2 By doing a complete aerial
3 reconnaissance of the various alternatives, it is easier--
4 well, it's not easy, but it's more acceptable to make
5 an attempt at assessing the relative quality or importance
6 of streams at the habitat level than it is to assess what
7 fish populations might be present in any of the particular
8 streams that you look at.

9 MR. MCNALLY: In that
10 sense then, the analysis would be more on a fish potential
11 basis?

12 MR. JENKINS: Precisely,
13 right, because the inventory information for the Territory
14 is so limited.

15 MR. MCNALLY: Okay. The
16 reason I bring that up, of course, is the recognition
17 of the limitations of what we're basing our analysis
18 on. I think it's a fair point--I stand to be corrected
19 if anyone disagrees, but the comparisons that we are
20 starting to make are based on very, very touchy
21 information, and I don't mean that in a critical sense
22 though. I mean that in a very solid sense; that the
23 data base that we're all using with reference to fish
24 is very light and when we start comparing corridors,
25 I think it's fair to give your best estimate, but there
26 is a touch of hesitation most certainly in my mind with

1 any outright recommendation made.

MR. JENKINS:

2 It's for that very reason
3 that we emphasize our comparison of the alternatives is
4 not meant to exclude any particular route, and it is
5 necessary after this to look at a route selection study.

6 MR. MCNALLY: Fair enough.

7 I had one touch of uncertainty. I guess I needed some
8 help in clarification. You mentioned that you had
9 considered sensitivity disruption--to disruption, yet
10 earlier on there had been a comment that no mitigation
11 was considered. Yet, in my mind, they do tie in.

12 MR. JENKINS: There's no
13 doubt that they do tie in, but that was one of the
14 difficulties we were presented with. There was much
15 more information on the amount or kinds of mitigation
16 measures that could be applied to the Alaska Highway,
17 the Alaska Highway alternative, than there were for the
18 other alternatives.

19 Right away we're looking
20 at a biased--in that particular case, looking at mitigation,
21 towards Alaska Highway, because we'd know how to mitigate
22 the impact on the fish. For that reason, we took the
23 worst possible case, working on the assumption that
24 appropriate mitigation measures would be applied regardless
25 of the alternative corridor that was selected.

26 MR. MCNALLY: Fair enough.

1 The last question that I had which you can foresee as
2 a natural is how did you fit in--or what justification
3 did you fit in for your relatively low rating for fish?

4 MR. JENKINS: In that
5 hierarchy table?

6 MR. MCNALLY: Yes.

7 MR. JENKINS: Well, I don't
8 want to accept all the blame for that. First of all,
9 it's not my number. It's a group consensus number and
10 that's an important point to clarify. Each professional
11 in the group, and there were five, six of us I guess,
12 looked at the basic categories of the environment at
13 the very beginning and a group consensus was arrived
14 at based on the criteria we've already outlined.

15 From there, they were
16 broken down into components. Now, it turns out that
17 the group consensus for fish is substantially lower
18 than mammals. As a fisheries biologist, I am only
19 considering fisheries values within the Yukon Territories,
20 and as a professional, I might think that's a little
21 low. But I don't have the information or the experience
22 for the other component values within the environment
23 of the Yukon Territories and so that's a biased weighting
24 of the fish, on my part. That's why we used the group
25 consensus approach, to try to eliminate some of that
26 bias.

1 MR. McNALLY: Thank you very
2 much. Just in closing--I didn't mean it in any way on the
3 critical sense of the work that's done. I recognize the
4 difficulties that are involved in it, but I just had
5 a few problems with some of the concepts. Thank you.

6 MR. CHAIRMAN: Thank you, Mr.
7 McNally. Are there any other questions of clarification?
8 Okay. Could we go on to the next category, Mr.
9 Parkinson?

10 MR. PARKINSON: The next
11 category. We'll put Dr. Guthrie in front of the microphone
12 here to deal with the wildlife.

13 DR. GUTHRIE: Thank you, Mr.
14 Chairman. Do you have a preference for how you would like
15 me to proceed? If you have, then I'll follow it your
16 way.

17 MR. CHAIRMAN: Well, actually
18 no. Proceed the way you think best in describing to us
19 what the relative factors are in the four routes.

20 DR. GUTHRIE: I think I
21 would actually like to back up just a touch and try and
22 perhaps explain a little bit about how we got numbers
23 to start with, and it might help when you try and under-
24 stand what we did with them.

25 The first thing that I had
26 to do, once we had established these relative importance

1 values which you see in the hierarchy table, was to
2 select appropriate parameters for my own component and
3 in order to do this, I listed most of the species of
4 birds and mammals that were likely to be encountered on
5 these four alternative routes.

6 I also, using the information
7 that was available in the various Mackenzie Valley reports
8 prepared by the Government and also by the consultants--
9 they had some very good matrix analyses in there with
10 regard to potential impacts on these various species.
11 I drew heavily upon their experience and I selected various
12 types of impacts, categories of impacts would be a better
13 phrase for it, that might impinge upon these various
14 species.

15 I went through all these,
16 again using a 0, 1, 2 , 4 rating just because it was
17 convenient in terms of severity of impact that I would
18 expect from each of these and I rated for each species--
19 I gave a 0 to 4 rating to the class of impact, and this
20 helped me--I could get an overall summation out of that,
21 and I used this to help me select the species that I
22 would actually consider.

23 The ones which came out
24 with the higher overall scores seemed more sensitive
25 and I utilized these to assist me in selecting the
26 species I would actually consider. Now, the parameters

1 that I ended up with were sheep, caribou, moose. I lumped
2 the grizzly and wolf together under large carnivores.
3 I considered aquatic fur bearers. I considered waterfowl,
4 upland game birds, and raptors.

5 Those were the eight parameters
6 that I used in my evaluation. I felt I should mention
7 this because some people may feel that there are things
8 that should be included and if so, then they should let
9 me know about that.

10 I'm not going to run through
11 all these criteria that I picked unless someone has
12 burning questions on it, but I'll run through--use sheep
13 as an example. The types of impacts that I felt might
14 be particularly pertinent to sheep, and this is listed
15 in order of--my estimation of the order of importance
16 was, first of all, new access.

17 Secondly, was the exploitation
18 that I anticipate would happen both from the pipeline
19 construction influx of people and also from the people
20 that will follow for years and years thereafter using
21 these access possibilities. The third thing was
22 harassment and particularly aerial harassment. The
23 fourth thing that I thought would be important was
24 long term disruption of movements and we've heard several
25 bits of discussion about that in regard to compressor
26 stations in Ibex Pass.

Noise, including aircraft, blasting, compressors; and lastly, habitat destruction and degradation. That's sort of my order of importance for these.

Now, I then assembled these into various criteria, a description that I used when I went through this thing mile by mile, all the routes mile by mile, and assigned my 0, 1, 2 or 4 rating for impact. I'll just read a couple of these, if I may, so you have an idea of how I combine these things.

A number 4 impact for sheep, for instance, would have been where I had new access required through sheep habitat requiring extensive use of aircraft, disruption of habitat between ranges, or location of compressors between ranges. This goes on down to--I won't read all of them, but the number 1 then drops down to construction activities in areas where sheep populations are already accessible with no direct encroachment on the sheep range. Then a 0 is construction through areas where sheep populations are simply not available for exploitation.

So, that's the range of values that I'm using in my criteria. Now, I then went through on a mile by mile basis on each of these routes and assigned an impact magnitude for the particular section I was working on. These were then

1 multiplied by the length of the particular chunk that
2 I was examining. This was my mileage factor, weighing
3 it by linearity.

4 Following that, we multiplied
5 that product by our importance value which was assigned
6 to sheep parameter. This gives us an overall environmental
7 impact rating, I think was what we were calling it, for
8 that particular parameter and by summing then all of the
9 parameters on each route, I could get an overall number,
10 which hopefully is indicative of the relative impact
11 and sensitivity to impact and human values and all of these
12 things which work into here.

13 On this basis, I was able
14 to rank my particular component, wildlife, for each of
15 these routes. As Mr. Parkinson pointed out, for my
16 component, the Alaska Highway was the preferred route.
17 The Klondike was the second preferred. The Robert
18 Campbell was the third and the Liard/Tintina Trench route
19 was last on my list of preferences.

20 Now, again, keep in mind
21 that we just ranked these by component for your convenience
22 in understanding how they shook out. It has--you did
23 comment on the possibility that there was a duplicate
24 purpose here and I think the gentleman here commented
25 on that as well; that if one assumes--that's based on the
26 assumption that we're only transporting Alaska gas. Now,

1 if we change that assumption, and make the assumption
2 that we eventually will hook in the Dempster, one has
3 to add to that the environmental cost, if you would, of
4 the section of the Klondike route that would be required
5 to connect that. This probably is not strictly within
6 our terms of reference, but if it's of interest to you,
7 when one does that the Alaska Highway no longer is the
8 preferred route. The Klondike route does become the
9 preferred route for wildlife, if one makes that
10 assumption.

11 I don't know whether that's
12 of any help to you and if it's totally irrelevant, you
13 can just wipe that off the record with my blessing.

14 MR. CHAIRMAN: Tell me,
15 you suggest that sheep, caribou, moose, large carnivores
16 and so on, you gave orders of importance to. Could you
17 enlighten us on that ranking; which ones you considered
18 the most important as indicators?

19 DR. GUTHRIE: Just one moment
20 until I find the paper that that's on, yes. That's
21 correct. The component of wildlife, out of the total
22 of 1,000 possible points, the wildlife component was
23 assigned on our group consensus approach, 350. I subsequently
24 broke those down as follows, and I used again this ranked
25 pairwise comparison technique which the Alaska Pipeline
26 Panel utilized. This broke down as follows then.

1 Sheep were assigned 20.
2 Caribou, 15. Moose, 8. The large carnivores got 20.
3 The raptors got 10. The upland birds got 5. The fur
4 bearers got 11 and the waterfowl got 11.

5 MR. CHAIRMAN: That doesn't
6 make 350.

7 DR. GUTHRIE: No, I'm
8 sorry. I'm giving you the wrong figures. I've got too
9 many things on my paper here. Let me back up again
10 here. The sheep got 70. The caribou got 52 and a half.
11 The moose got 28. The large carnivores got 70. The
12 raptors got 35. The upland birds got 18. The fur
13 bearers got 39 and the waterfowl got 38. I hope that
14 one works.

15 MR. CHAIRMAN: It probably
16 does, yes.

17 DR. GUTHRIE: It should
18 be closer anyway.

19 MR. CHAIRMAN: Could you
20 describe any of the areas along any of the routes that
21 you considered of great importance, of severe impact,
22 severe probable impact, if any?

23 DR. GUTHRIE: There are
24 some. I hesitate to extend too far in this area simply
25 because our data is really very, very sketchy for many
26 of these areas and I would probably miss as many as I

1 hit if I tried to give you a listing. I would single out
2 the problem of creating new access in the Tintina Trench
3 as one of the concerns that I have. That goes next to the
4 game sanctuary there. It also goes through some very
5 good potential sheep habitat. I have no figures on how
6 many or just where these sheep might be distributed.
7 There are caribou through there and there are moose in
8 that Trench as well.

9 All of these would be
10 subjected to some pretty severe impacts from that routing.
11 There are also, of course, cliff nesting raptors in that
12 Tintina Trench area through the more rugged portions.
13 So, those are the things I would probably single out as
14 most significant and other than that, I don't think I
15 should extend too far in that.

16 MR. CHAIRMAN: So would
17 you say this is the major reason the two Tintina Trench
18 alternatives got the 3 and the 4?

19 DR. GUTHRIE: That is correct.

20 MR. CHAIRMAN: Any questions
21 from the panel? Dr. Hughes?

22 DR. HUGHES: It's my
23 understanding that the one reason for establishing the
24 McArthur Game Reserve was that there's an interesting
25 race of sheep there that's an intergrade between the
26 Dall sheep and the Stone sheep. Did you consider this

Dr. Hughes
Dr. Guthrie
Mr. Klassen

1933

1 sort of unusual and rare population carrying some
2 weight too? Maybe my information on that is wrong, or
3 maybe Mr. Klassen is going to speak to this later, I don't
4 know.

5 DR. GUTHRIE: I don't know
6 myself whether that is correct or not. Even if it were,
7 I probably wouldn't have gone overboard on my rating in
8 that direction because I don't get quite as upset by
9 those things as some people do. The Stone sheep and
10 the Dall sheep do, to the best of my knowledge, tend to
11 interbreed anywhere that their ranges overlap, and so
12 I wouldn't be particularly surprised to find intergrades.

13 We have in fact just
14 recently in some reconnaissance surveys done for us over
15 in the Howard Pass region located sheep populations there
16 that also show some traces of the Stone or Fannin
17 sheep type in with the Dalls. So, I'm not sure just
18 how unusual that may or may not be. Mr. Klassen would
19 be the expert on that.

20 DR. HUGHES: Thank you.

21 MR. CHAIRMAN: Would you
22 like to comment now, Mr. Klassen?

23 MR. KLASSEN: I don't know
24 that I'm the expert on that. The McArthur Game
25 Sanctuary was established--I don't recall the date on
26 the recommendation of Dr. Bostock I believe because of

1 the occurrence of Fannin sheep in that area. The Fannin
2 being an intergrade between Dall and Stone, but since
3 that time we found that Dall sheep occur in the Pelly
4 Mountains and as you say, over toward the Howard Pass
5 area.

6 That population of sheep
7 in the McArthur Game Sanctuary is not the only population
8 of Fannin sheep.

9 MR. CHAIRMAN: Mr. Wykes
10 has a question.

11 MR. WYKES: Mr. Mathews, in
12 the selection of your--

13 MR. CHAIRMAN: Dr. Guthrie.

14 MR. WYKES: Guthrie, I'm
15 sorry.

16 MR. CHAIRMAN: You'll get a
17 shot at Dr. Mathews in a short while.

18 MR. WYKES: In the selection
19 of your wildlife species that you've chose to number,
20 it seems to me the possibility exists that perhaps rare,
21 endangered species or unique populations of animals could
22 be overlooked on any of these routes. Is that true or
23 does that fit in somewhere into the synthesizing of
24 this material?

25 DR. GUTHRIE: No, I don't
26 think it's likely that we overlooked anything of great

Dr. Guthrie
Mr. Wykes
Dr. Hughes

1935

1 significance. There's always a possibility you've overlooked
2 something, but in general, rare or endangered species was
3 one of the criteria used to select these parameters. That
4 was one of my basic criteria in selection.

5 Also, I might add, I used
6 human values, things of great human value, things that
7 were particularly sensitive to impact. Those were the
8 general range of things. Mr. Parkinson, I believe,
9 covered these in his brief as well.

10 MR. WYKES: Thank you.

11 MR. CHAIRMAN: Dr. Hughes?

12 DR. HUGHES: I'd like to

13 go back to a point raised earlier by Mr. Wykes on whether
14 indeed you can give--use the same rating scale for the
15 different routes. Now, if we wanted to be considering--
16 if you had been considering the Dempster Highway only,
17 would sheep have got a higher proportion of the score
18 than caribou?

19 DR. GUTHRIE: You're talking
20 about assigning the importance values?

21 DR. HUGHES: Right, within
22 the category you dealt with. Here you're rating caribou
23 at 52 and a half importance points. Sheep as 70. Now,
24 could you, if these routes had included the Dempster
25 Highway, have retained those same importance points?

26 DR. GUTHRIE: Yes, I think
it's valid to retain them because we were looking at it

1 in a fairly large sense. If we had been trying to evaluate
2 just the Dempster Highway, perhaps we might have allotted
3 those points differently because of just are a priori knowledge
4 of what may or may not be in that.

5 But I think what we did when
6 we were doing this; we had a fairly broad view and we're
7 looking at it from a more--a standpoint of the Yukon as
8 a whole rather than looking at it more narrowly in
9 terms of one or two of the routes. So, I think on that
10 basis we're justified in retaining those importance
11 values for anything that we consider within the Yukon.

12 If we were to go to
13 South America, I think I'd have probably changed them
14 a little.

15 DR. HUGHES: Well, there is
16 a mileage--you said you looked at this mile by mile.
17 There's also a mileage factor built into this?

18 DR. GUTHRIE: That's correct,
19 sir.

20 DR. HUGHES: So that
21 possibly for the Dempster Highway you'd have had many
22 more miles of high caribou concern and that would have
23 shown up in your analysis?

24 DR. GUTHRIE: That's
25 correct. Excuse me just one moment. I have, in fact,
26 scored the Dempster as well and this is exactly what does

1 happen. Even though the caribou were allotted a lower
2 importance score, the total environmental impact rating
3 that you'd get out of that is heavily influenced by the
4 carnivores and by the caribou, with the raptors also
5 forming a significant variable in there.

6 So, it seems to work reasonably
7 well as a common basis for comparison.

8 DR. HUGHES: Yes, well that's
9 fine. I'm a bit happier about the rating system with
10 that explanation.

11 MR. CHAIRMAN: Any questions
12 of clarification from other advisors? Mr. Retfalvi?

13 MR. RETFALVI: Yes, Mr.
14 Chairman. For a matter of clarification, a number of
15 questions of Mr. Guthrie, I believe. Just as a preamble,
16 since this discourse here was mainly on methodology which
17 I don't think we have much to quarrel about--for the
18 sake of record perhaps, the methodology used, which is
19 very similar to this one in the initial environmental
20 evaluation of the Templeton group for want of a better
21 name, is perhaps as satisfactory as any, and I think we
22 would prefer it from the viewpoint that it has taken
23 into account to a greater degree species of importance,
24 but again are ranking not on the merit of economic value,
25 but that of being greater endangered.

26 A number of questions. In

1 the absence of the alignment in the Tintina Trench, how
2 did you proceed to evaluate wildlife values affected?

3 DR. GUTHRIE: You're saying
4 without a definitive line, how did I evaluate them?

5 MR. RETFALVI: Umm-hmm.

6 DR. GUTHRIE: I would
7 reemphasize the points the previous speakers have made.
8 We are looking at corridors in a fairly broad sense.
9 We are trying to not get tied down to individual
10 alignments because the only route for which we have
11 an individual alignment is the proposal by Foothills
12 for the Alaska Highway.

13 One could, I guess, assume
14 that any future proposals along the Klondike or Campbell
15 would follow closely those routes, but we don't know
16 that. So, we were looking at this in a very broad sense.

17 MR. RETFALVI: Like how
18 broad?

19 DR. GUTHRIE: I can't give
20 you a flat answer. For my particular parameters, the
21 thing that I am most concerned about for most of them,
22 not all of them, but for most of them is not say habitat
23 loss or degradation. It is the losses that I suspect will
24 occur from the influx of workers and people who will
25 come later using those access possibilities.

26 MR. RETFALVI: Well, wouldn't

1 you say--if you went into all this trouble of quantifying
2 your opinion and your recommendations, wouldn't it have
3 been proper to perhaps try to set a definite line or borders
4 on the corridors?

5 MR. PARKINSON: May I respond
6 to that?

7 MR. RETFALVI: Sure.

8 MR. PARKINSON: The level of
9 work that we're working to in this exercise is to establish
10 the environmental, if you like, feasibility of going one
11 particular route over others. Within the framework of
12 a corridor concept, you have--we have retained the option
13 of flexibility for route selection.

14 If we had selected a route
15 within a corridor, there's a very good chance that we
16 could have hit upon some particularly bad aspect that
17 would have scored that alternative quite out of proportion.
18 So, if you can consider that this is the first step in
19 route selection, that is selecting the corridor for the
20 route, then I think you'll understand it a little better.

21 MR. RETFALVI: Well, I think
22 I understand except, Mr. Chairman, I do not think I
23 agree on the simple ground that if you quantify in one
24 instance and then you work much on feeling or guess work
25 on the other, the two doesn't really merrily mix.

26 My other question; why was

1 the departure in the methodology in regards to wildlife
2 different than that applied for fisheries? I thought I
3 liked the idea very much that in view in the paucity
4 of data for the habitat rather than for the species, and
5 I notice in your approach you've stayed with the species.

6 DR. GUTHRIE: I suppose to
7 some extent I was following the lead of the group of the
8 Alaska Pipeline Panel, but I think even without that
9 lead, I would have done it this way simply because the
10 habitat is so different for some of these species. I
11 have to look at them as species, and consider the habitat
12 of each group. I don't know how I would go through and
13 look at wildlife habitat, because wildlife habitat varies
14 so terribly depending upon which species one is talking
15 about.

16 MR. RETFALVI: Right. I
17 agree. If I may ask what sources of information did you
18 use and being aware--it's sort of a leading question,
19 being much aware of the paucity of information for the
20 alternates as well as for the mainline. How did you
21 handle the large differences in the level of information
22 available in your comparison?

23 DR. GUTHRIE: Okay. Let
24 me preface this by saying I think that from a previous
25 comment you made that you feel that this is somehow
26 more quantitative than I feel that it is. The real

1 basis or the real necessity for using the numbers game,
2 if I might call it that, is to get some systematic
3 approach. Let us face it; it is a subjective evaluation
4 and we've used a systematic approach to reduce the
5 subjective bias.

6 But I don't want to leave
7 anyone with the impression that this is a firm assessment.
8 Now, if I may go on to try and elaborate--reiterate
9 for me just what it was now that you wanted because I
10 lost your train there when I was--

11 MR. RETFALVI: What my line
12 of questioning was was how did you handle the large
13 differences in the level of information available between
14 the various alternatives?

15 DR. GUTHRIE: Right. Okay,
16 as we stated in our brief, because there is such a
17 difference, we all went and looked at the thing from an
18 aerial reconnaissance point of view, and we tried to
19 use this as sort of a common denominator, if you would,
20 a basis of departure for the different ones.

21 Now, we supplemented this--
22 our own impressions, our own evaluations of the habitat
23 that we saw. We supplemented this with information
24 available from Government documents, from discussing
25 with Government people who've been very helpful to us.
26 I think they're referred to as the ALUR map series,

1 which is again a pretty generalized thing, but a good
2 first cut and of great benefit to us in this analysis.

3 These were all sources of
4 information which we used.

5 MR. RETFALVI: May I, Mr.
6 Chairman, point out that the other series has not dealt
7 to any great degree or value with migratory bird habitat
8 or populations. It's been primarily ungulate oriented,
9 and the reason I wish to make this point is that I don't
10 particularly like the very low ranking of the waterfowl
11 considerations in your value judgments.

12 DR. GUTHRIE: I apologize
13 if I--

14 MR. RETFALVI: One other
15 additional question, and again it's a leading question,
16 and excuse me if you wish--was your approach overwhelming
17 the economical as it appears to the listener, or was
18 there other considerations taken into account?

19 DR. GUTHRIE: I certainly
20 hope it wasn't rated just to economic value because I
21 would be ashamed of myself if I did that.

22 MR. RETFALVI: Well, the
23 reason I mentioned this is reading your list, it does
24 appear to me, and you said that you have followed the
25 footsteps of the Environmental Assessment Board from
26 Winnipeg whose methodology I have read and liked and

1 I think I have preferred their list to that presented here
2 because I think they have made a serious attempt of
3 incorporating external values, those beyond economic
4 terms.

5 Without being unduly harsh
6 on the presentation, I wish to point out that the
7 implication of using a methodology where various parameters
8 are numerically evaluated tends to be misleading in the
9 light of the great lack of data that is evident almost
10 every turn you go, and in this sense, I can't help but
11 think of the Beagle(?) principle associated with computers;
12 that, you know, you may assemble a large compendium of
13 top notch experts of the various field. If you had little
14 data to work with, you're going to have very little
15 information to come out at the end.

16 In this sense, I would like
17 to leave with you that the comparisons between the various
18 alternatives on the basis of migratory information is
19 very difficult to make at the time and I would like to have
20 the panel view this accordingly. Thank you.

21 DR. GUTHRIE: May I just
22 respond briefly to that. I did try and evaluate migratory
23 waterfowl habitat. Now, obviously I wasn't there during
24 the migration so I couldn't do the best job on that,
25 but we did evaluate the wetland habitat as we flew it,
26 and we used that in many cases where the AIUR map series

1 didn't say anything about waterfowl habitat. If I thought
2 it was waterfowl habitat, I rated it as waterfowl habitat.

3 Secondly, we did see--we were
4 able to see some evidence of waterfowl and shore birds
5 using this. The third thing is that I agree with the
6 gentleman on the subject of the numbers game and the
7 fact that it tends to be misleading, which is precisely
8 why we haven't given you our final scores, because we
9 didn't want to do that. We didn't want to mislead you.

10 MR. RETFALVI: May I ask
11 one more question please, Mr. Chairman, just emanating
12 from this last statement; that since there was some
13 migratory bird habitat evaluation, I very much would like
14 to use the methodology you have employed and what were
15 your criteria of evaluating migratory bird habitat?

16 DR. GUTHRIE: Essentially
17 we were looking at the--we rated it higher if there was
18 a preponderance of marsh emergent type vegetation. We
19 rated this higher than we would have bogs or lakes
20 without sufficient--without shallow areas and extensive
21 areas of emergent vegetation.

22 This is about the basic
23 level we could do from an aerial reconnaissance and I
24 am sure you appreciate limitations of what you can see
25 there.

26 MR. RETFALVI: I'm sure that

1 the gentleman is aware as much as we are that standard
2 methodology employed in lands further south from us,
3 especially in connection with the C.L.I. land classification,
4 is not applicable in northern environments because the
5 water bodies tend to look grossly different and something
6 that would look very low in quality in southern terms is
7 indeed quite high quality in northern terminology. This
8 is something that we are just finding out.

9 Thank you.

10 DR. GUTHRIE: Thanks for
11 that comment. I appreciate that.

12 MR. CHAIRMAN: Anyone else
13 wish to comment on the wildlife? Mr. Klassen?

14 MR. KLASSEN: Mr. Chairman,
15 is this the only opportunity that we're going to get
16 to comment on the alternate routes?

17 MR. CHAIRMAN: No, no, no.
18 We'll go through the Envirocon presentation and then
19 I'll ask each of you to advise us with your own methodology
20 on the alternates.

21 MR. KLASSEN: Okay, I'll
22 restrict myself to a few questions then. How did you
23 arrive at an evaluation number for a particular route
24 regarding, for instance, sheep habitat? Did you assume
25 a constancy or homogeneity over the whole route?

26 DR. GUTHRIE: No. As I said,

1 we worked on relatively small segments along the route.
2 We broke it up into areas that we hoped were relatively
3 homogeneous and we rated those--we gave a rating to a
4 homogeneous bit of the route and multiply it by the
5 mileage of that, hopefully homogeneous bit, and we summed
6 all of these and that's the basis for that score.

7 MR. KLASSEN: The assumption
8 then was that on the basis of the area that you sampled,
9 you could extrapolate from there that the sheep habitat
10 was of a certain value, whatever number you put on it,
11 and then you could just multiply that by the number of
12 miles along that route to arrive at a value of sheep
13 habitat, for instance, or impact or whatever it was that
14 you were discussing?

15 DR. GUTHRIE: Well, it
16 certainly wasn't impact in terms of an impact assessment.
17 I'm not sure I quite understand that. I wonder if Mr.
18 Klassen would be willing to try me again in a slightly
19 different way, because I feel like I'm missing something
20 on that question.

21 MR. KLASSEN: Well, I felt
22 that when you were discussing how you arrived at the
23 judgment, if such it was.

24 What I'm wondering is how
25 did you come to the final figure that you have by multiplying
26 the number of miles? I'm right in that, am I not? You

1 multiplied--

2 DR. GUTHRIE: That's correct.

3 MR. KLASSEN: --a certain
4 factor by the number of miles along that route. I'm
5 wondering how you arrived at the value that you placed
6 on that factor. If it was destruction of habitat that
7 you were considering, then you must have some feeling
8 for the amount of habitat that was there. How did you
9 determine how much habitat was there?

10 DR. GUTHRIE: I wasn't making
11 any effort to get an aerial appraisal of habitat. What
12 I was attempting to do was to look at the route or the
13 corridor, I won't say route, look at the corridor, and
14 if, for instance, there was caribou habitat there for
15 ten miles, then I rated it. I gave it a certain rating
16 depending upon whether it--on the criteria that I had
17 preselected, and these took into consideration some of
18 the things I mentioned previously of whether it was
19 new access, whether there was likely to be heavy
20 exploitation of the population, whether or not it was a
21 habitat that was particularly sensitive to disturbance,
22 in the case of caribou the tundra would have been.

23 These things were all grouped,
24 if you would. These factors were grouped into various
25 descriptions and my rating of 0, 1, 2 or 4 was based on
26 which of that clump of descriptions it fit into.

1 MR. KLASSEN: You rate
2 access quite high on your scale of, I'm assume it's impact,
3 is it?

4 DR. GUTHRIE: We'll say
5 impact for the moment at least.

6 MR. KLASSEN: Okay, without
7 using it the way that we have when we were talking about
8 Foothills' project. Was it not difficult to evaluate
9 how much access there would be if you didn't know
10 specifically where the route was? For instance, in the
11 Tintina Trench, regardless of which one of the alternates
12 along the Tintina is referred to, it would make quite a
13 bit of difference to the amount of access that would
14 be created, depending on which side of the Pelly River
15 the pipeline route followed, for instance.

16 In some of those places,
17 you might encounter sheep habitat on one side and not on
18 the other.

19 DR. GUTHRIE: Yes, that's
20 true. In cases like this, I'm going for the maximum
21 impact. You see, without knowing the detailed route
22 location, I'm trying to provide a maximum potential
23 impact evaluation, is really what I'm trying to do. I
24 would rather do as the engineers do and error on the
25 conservative side than I would to underestimate these
26 things.

1 So, in cases like that, I
2 think you can assume that the figure that I have evolved
3 represents fairly closely the maximum impact that might
4 be expected, and that is without mitigation, of course.

5 MR. KLASSEN: Those are all
6 of the questions I have now. Will Dr. Guthrie be available
7 later when we make the comments that we will on these
8 alternates to answer questions that we may raise at that
9 time?

10 MR. CHAIRMAN: I would hope
11 so. Will you be available?

12 DR. GUTHRIE: I presume I
13 will be. I exist at the pleasure of the panel.

14 MR. CHAIRMAN: Thank you.
15 Mr. Hernandez?

16 MR. HERNANDEZ: Yes, I've
17 got a couple of questions also. First of all, in the
18 use of the word caribou, does that mean both woodland
19 and barren ground when you're talking about the Dempster?

20 DR. GUTHRIE: Yes, I haven't
21 tried to separate the species or subspecies of caribou.
22 I was working on the assumption that even though they
23 do things quite differently, they are still more alike
24 than they are different, and that I could safely put them
25 into one category.

26 If I had really good data,

1 I would want to split those out, but I don't have really
2 good data and it did seem like kind of a futile thing
3 to try and divide them and become very fine on one and
4 when my data was so course I couldn't really discriminate
5 that finely.

6 I'm trying just to keep
7 the parameters and the data in some sort of balance, seeing
8 that they're of the same order of coarseness I guess you
9 would say.

10 MR. HERNANDEZ: In your
11 rankings that you gave earlier, you talked about the
12 wildlife from the table in figure 1. It's mammals and
13 birds. Was the assessment done separately for mammals
14 and birds and then combined, or was it done for wildlife
15 with the eight components, with the eight parameters that
16 you used as a total?

17 DR. GUTHRIE: No, it was
18 done parameter by parameter and then combined into that
19 total component of wildlife.

20 MR. HERNANDEZ: So, you don't
21 have a breakdown whether the ranking would be different
22 between mammals and birds for each of the four routes?
23 You didn't do that?

24 DR. GUTHRIE: No. I could
25 pull that out in fairly short order if it was of paramount
26 importance. I don't really think it would contribute a lot.

1951

1 That's why I lumped it, but if that's desired, I can extract
2 that information at a later date.

3 MR. HERNANDEZ: With regards
4 to the grouped parameters like waterfowl, did you do it
5 by species breakdowns or you just said waterfowl and
6 looked at mile by mile?

7 DR. GUTHRIE: There's very
8 little data on waterfowl in general, and virtually none
9 on species except for one or two cases where, as I say,
10 the ALUR map series do comment on specific things.
11 So, I didn't feel justified in trying to break that to
12 a specific level.

13 MR. HERNANDEZ: And that was
14 the same for raptors?

15 DR. GUTHRIE: That is true.
16 Again, the raptors--there's virtually no good hard data
17 available. So, I didn't attempt to split those out.

18 MR. HERNANDEZ: Thank you.

19 MR. CHAIRMAN: Mr. Bouckhout?

20 MR. BOUCKHOUT: No questions
21 here.

22 MR. CHAIRMAN: Any questions
23 of panel staff? I didn't ask you whether you had questions
24 on the fish. Do you? No. Any comments or questions
25 from the floor on this particular part of the Envirocon
26 analysis? Then before we go on to the next, we'll break

1 for coffee.

2
3 (PROCEEDINGS ADJOURNED)

4 (PROCEEDINGS RESUMED PURSUANT TO ADJOURNMENT)

5
6 MR. CHAIRMAN: May we please
7 reconvene. Mr. Parkinson, could we move into the next
8 category please.

9 MR. PARKINSON: Yes, I'd
10 like to introduce Dr. Rolfe Mathews. Rolfe will discuss
11 the vegetation component.

12 MR. CHAIRMAN: Thank you.
13 Dr. Mathews?

14 DR. MATHEWS: I won't dwell
15 anymore on the methodologies. I think Dr. Guthrie has
16 covered those adequately. They're basically the same
17 approach for myself as well. There's only one point in
18 that regard I'd like to reiterate and it is that vegetation
19 is an extremely mileage dependent parameter because you'll
20 be cutting a swath anywhere up to 125 feet wide wherever
21 you go.

22 So, it's directly proportional
23 in most instances to the length of the line. There's
24 a second part I'd like to make clear and in regard to
25 vegetation, when the final ratings were arrived at, the
26 maximum difference between a first choice and a last choice

1 was no greater than thirty-eight per cent. There's no
2 factor of two or three times more favorable. They were
3 relatively close. I think this is largely a reflection
4 again of the mileage component; is that the roots, although
5 they do differ in length, have many of the same concerns
6 scattered over various portions and the ratings do reflect
7 this mileage component fairly strongly out of that total,
8 out of that finalization.

9 I think what I will do is
10 I'll quickly outline the parameters within the vegetation
11 component that I looked at and I'll answer any questions
12 as to why I chose them and how perhaps they were rated.
13 The first parameter I looked at was forest productivity
14 and that is largely information taken from the land
15 use information series maps which breaks out, for the
16 Yukon, the areas where you have commercial saw timber
17 present versus commercial mix saw timber and pulp wood
18 and commercial pulp wood, and areas of no productive
19 forest in a commercial sense.

20 The second parameter I
21 looked at was forest fire concern. As a basis for that,
22 I used the map of the Yukon Forest Service, which is
23 called the priority zones for fire suppression and these
24 are rated areas of low priority for fire suppression
25 and areas of high priority for fire suppression, and I
26 gave high scores to areas where the corridor passes through

1954

1 areas where a fire would be of potential great concern for
2 any number of reasons which are stated in the Yukon
3 Forest Service's guidelines to the fire suppression statement
4 and I'll clarify that later if there are any questions.

5 Unique vegetation was the
6 third category and in this I tried to get an estimate
7 of the potential for finding rare, unique, new range
8 extensions, or areas that are already identified as
9 having unique vegetation components such as certain
10 I.B.P. areas or proposed I.B.P. areas.

11 Again, I'll state here that
12 the potential exists anywhere along either routes for
13 finding new rare or endangered plant species, although
14 there are certain areas where this potential may be
15 greater; I.B.P. areas being one and certain unglaciated
16 portions of the Yukon being another. This relates mainly
17 to the Dempster again where vegetation reconnaissance
18 hasn't progressed very far to date.

19 Tundra vegetation was my
20 fourth component. This one had the highest importance
21 rating because I believe there's a general consensus
22 that wherever you do cross tundra vegetation the recovery
23 will be slow. Revegetation may be more difficult; it
24 may not be. But tundra does generally provide a greater
25 vegetation concern.

26 Grasslands were the fifth

1 category and these again are relatively small in area
2 for any of the corridors. They're accorded again a
3 relatively lower importance rating.

4 Wetlands were the sixth
5 category and here again, I tried to get some handle on
6 the possible potential for fuel spills or such seeping
7 down into wetland fens or bog areas and affecting emergent
8 of floating aquatic vegetation.

9 The last category I looked
10 at was burns because there are considerable recently
11 burned areas in the Yukon, and although these are not
12 of great, perhaps sensitivity as vegetation areas
13 in themselves, because they are already burned and
14 disturbed, there is a potential there for perhaps increased
15 erosion because the ground cover vegetation and litter
16 may have been burned away, and the area may be more
17 exposed to erosion.

18 Those are the seven parameters
19 that I evaluated with regard to vegetation.

20 I'll move now to the rating
21 for the four alternate routes, which is reflected in the
22 final rating but is different than the final rating.
23 I'd like to explain why. I had the Alaska Highway as
24 the preferred corridor on the basis of vegetation, as
25 number one. Now, even though there are certain unique
26 vegetation components in Sheep Mountain and Slims River

1 Delta, the whole Kluane Park region, the route is
2 relatively short and as I mentioned before, since
3 vegetation is such a mileage dependent parameter, the
4 overall ranking for it came out somewhat lower than
5 for the other routes, but again not that greatly lower.

6 My least favorite route
7 was the Klondike route, and again that is a
8 reflection largely/^{due}to the fact that the Klondike route
9 being approximately 630 miles long is almost a hundred
10 miles longer than some of the other alternates.

11 For the main reason, I
12 will go back to why the Alaska Highway came up first;
13 is that all the other three routes, the Klondike Highway,
14 the Liard/Tintina and the Robert Campbell all have
15 in common the sixty mile connector from Dawson into
16 Alaska which is basically alpine tundra and since alpine
17 tundra had the highest importance rating and there's
18 a fair mileage there, although that parameter is
19 consistent for all three routes, it does weigh heavily
20 against those three routes in the final ranking.

21 The Liard/Tintina I had
22 ranked third and it obtained a lower ranking largely
23 because--in addition to the alpine tundra you cross and
24 the sixty mile connection into Dawson, you also cross
25 an alpine tundra area in the St. Cyr range of the
26 Pelly Mountains, just before you enter the Liard Plain.

1 So, that second tundra area
2 onto that route gives it a lower rating.

3 The Robert Campbell came
4 out as the second most preferred route. It's largely
5 because there's no alpine tundra along that route, all
6 except for the sixty mile segment.

7 I think that's probably
8 the main reason. I think I'd just like to stop there.
9 That's the main reason for those rankings and if there
10 are any amplifications, I'll ask for questions.

11 MR. CHAIRMAN: Right. Could
12 I ask a couple of questions and possible the other panel
13 members would too. Dr. LaCate would, yes.

14 Driving the Sixtymile
15 road, one is impressed by the vista and the aesthetics
16 of the countryside and one can't help but imagine a
17 pipeline scar in the tundra area. Was the aesthetic
18 aspect part of the vegetation component or was it treated
19 differently? If so, where?

20 DR. MATHEWS: No, I didn't
21 include it as a separate parameter, but I think that
22 concern is reflected in the high rating for tundra itself,
23 because the tundra, the slow recovery leaving a long
24 lasting scar, that's reflected in the high rating for
25 tundra as a vegetation parameter. So, aesthetics are
26 incorporated in that aspect. But I didn't treat aesthetics

1 separately because I'm not a landscape architect and I
2 really would have no accurate way of evaluating relative
3 vistas or other aesthetic aspects.

4 MR. CHAIRMAN: At this time,
5 would it be worthwhile telling us what are the mileages
6 of these various routes and where do they start and where
7 do they end?

8 DR. MATHEWS: They do vary
9 somewhat. I have them here. They do vary somewhat
10 according to which jog you take. For example, if you
11 go around Jakes Corner on the lower Alcan Highway, it
12 changes the mileage somewhat, but in general they would
13 be approximately for the Alaska Highway corridor approximately
14 526 miles. The Klondike corridor, approximately 630
15 miles, give or take a few.

16 The Tintina Trench/Liard
17 segment, about 554 miles. Sorry, that's the Tintina/
18 Robert Campbell route is about 554 miles. The Tintina/
19 Liard route is approximately 524 miles. So you can see
20 the big mileage difference is the Klondike route in its
21 total. It's considerably longer than any of the other
22 three, and that is why the Alcan Highway ended up to
23 some extent to be more favored over any of those three.

24 MR. CHAIRMAN: Okay. Now,
25 just so we don't have to go back over this again, are
26 these mileages from a common junction and terminal point?

1 DR. MATHEWS: Yes, we
2 established those at the beginning of the study and we're
3 all working with the same mileages and the same corridors.

4 MR. CHAIRMAN: For instance,
5 the three that go over Sixtymile, their terminal point
6 is somewhere in Alaska, is it?

7 DR. MATHEWS: No, we stopped
8 at the Yukon border. They would the additional impact
9 of Alaska, but since our terms of reference were to
10 consider only the Yukon, only the Sixtymile segment,
11 as far as the Alaska-Yukon border is considered for that,
12 we did not consider the portions of that corridor that
13 entered Alaska.

14 MR. CHAIRMAN: So they don't
15 have the same terminal point or beginning point, I guess,
16 working downstream for the gas?

17 DR. MATHEWS: For the purposes
18 of our assessment, we stopped at the border, but we don't
19 know where that would end in Alaska.

20 MR. CHAIRMAN: Okay, fine.
21 Thanks for the clarification. Any questions from the
22 panel? Dr. LaCate?

23 DR. LACATE: I'd just like
24 to have a point clarified. You used the terms "tundra"
25 and "wetlands", and I'm not sure just where organic
26 terrain fits in. Were you handling it or was that the

1 geology aspect?

2 DR. MATHEWS: Well, the terrain
3 aspects and geotechnical aspects were handled under the
4 physical land component. So, under wetlands, for example,
5 I did not consider muskeg areas what you would consider
6 organic terrain. That was forested. I restricted wetlands
7 largely to more or less unforested wetlands, fens, open
8 bogs, small lakes, pond fields and that nature. I did
9 not consider muskeg terrain as such.

10 DR. LACATE: Okay, fine.

11 MR. CHAIRMAN: Mr. Wykes?

12 MR. WYKES: Mr. Mathews,
13 you mentioned the use of the Yukon Forest Service
14 priorities for fire concern.

15 DR. MATHEWS: Umm-hmm.

16 MR. WYKES: I'm just wondering
17 if you could tell us what the criteria are for establishing
18 those priorities, whether they're environmental or there
19 are other reasons.

20 DR. MATHEWS: They're a
21 combination of different parameters. Very briefly--I
22 could give you the detailed list. I have it. But very
23 briefly, the priority zone 1, where the fire concerns
24 would be the greatest are generally areas near settlements,
25 near existing utility corridors, near existing numbered
26 highways. Those have the highest concern in the event that

1 a fire broke out from whatever reason. Included in that
2 also may be certain park areas that have a fire suppression
3 policy in conjunction with the Yukon Forest Service.

4 Certain areas of very
5 valuable, merchantable timber that are on a rotational
6 cutting cycle, I think that's basically what priority
7 zone 1 is.

8 TNO, is areas near very small
9 settlements of less than twenty-five people, hunting
10 lodges, mining camps, other such small perhaps transient
11 settlements, and a much narrower band along unnumbered
12 highways where there is access for people and there
13 may be a fire hazard, but they're not along numbered
14 highways.

15 Zone 3 I think falls under
16 any category of more or less productive forest that
17 might engender some economic loss and the last category
18 is sort of any of the wilderness areas that are
19 presently inaccessible, but that's sort of the general--
20 the emphasis is on proximity to human habitation and
21 other resource values.

22 MR. CHAIRMAN: Any other
23 comments from the panel? Would any of our advisors
24 like to comment on the vegetation aspect?

25 MR. WAHL: Can I go ahead?
26 Yes, Dr. Mathews, I take it that the tundra itself must

1 have been rated considerably heavier than the other
2 parameters that you have used because coming along the
3 Alcan Highway, especially in the western portion, the
4 proposed line comes very close and indeed crosses some
5 of the I.B.P. areas that are in that area. There are
6 also known unique plant species that occur in that
7 area, while we don't know of any actual ones occurring
8 elsewhere, and I wonder just how much greater importance
9 you put ^{to} the tundra as you did to the other parameters,
10 especially in the view of the fact that the Tintina/
11 Liard route, for example, is--well, for all practical
12 purposes the same length as the Alaska Highway, 526 as
13 compared to 524, and that's one of the questions.

14 Also, was any consideration
15 at all given to revegetation and possible hazards or
16 problems associated with revegetation along the
17 various routes?

18 DR. MATHEWS: I'll take the
19 last question first. There's one parameter that I
20 suppose could be included and that would be some parameter
21 something like revegetation success, but I wasn't willing
22 to make any judgments on that flying five thousand feet
23 up or lower on that basis.

24 I would--simply because
25 the revegetation aspect has been ^{so} untested for northern
26 areas, I would hesitate myself to go out and make a judg-

1 ment on whether the success would be greater in grasslands,
2 for example, than in tundra areas. So, I didn't make
3 that assumption at all. Again, that comes under mitigative
4 measures and we did not consider mitigation in this
5 evaluation. It was simply the potential impact.

6 The impact rating then could
7 be altered depending on how successful revegetation
8 procedures would be. It was included subjectively under
9 this system of rating. An impact either is 0, 1, 2 or
10 4.

11 For example, where grasslands
12 occurred on steep slopes, such as they do along the
13 Nordenskiold River on the Klondike route, I would give
14 a greater impact rating to grasslands on steep slopes
15 than I would to grasslands on level areas, because the
16 erosion potential is so different between the two.

17 But I didn't take potential
18 revegetation success as a separate parameter. On the
19 second point, the rating of the tundra relative to the
20 other parameters, again on the general consensus, most
21 people had tundra rated close to the top of the list or
22 at the top of their list in regard to relative weightings
23 within vegetation. It's sort of a, I think, generally
24 accepted fact, because of the slow revegetation due to
25 the poor growing conditions in the tundra, that it is
26 going to be more sensitive because it would be less likely

1 to recover quickly than other types of areas.

2 So, tundra, in fact, out of
3 161 total points allotted to vegetation, was given 60
4 points out of that 161 to reflect what I thought and what
5 they thought the relative importance of tundra was relative
6 to the other parameters.

7 The reason that perhaps the
8 unique vegetation for a relatively short distance along
9 Kluane Lake, Sheep Mountain and the Slims River Delta
10 and the Duke Meadows; that was rated at the highest
11 level, at 4, but since it covers a relatively small
12 mileage, that concern does not come out overall as greater,
13 and it throws still the general decision in favor of the
14 other line.

15 MR. WAHL: Okay, I guess
16 that's all the questions I have for now.

17 MR. CHAIRMAN: Thank you.
18 Any other questions? Mr. Bouckhout? Possibly also we
19 could get comment from Mr. Vaartnou on the success or
20 revegetation in alpine areas.

21 MR. BOUCKHOUT: My question,
22 Dr. Mathews, is a very brief one. How did you arrive
23 at the figure of 526 miles for the Alaska Highway route?

24 DR. MATHEWS: The Alaska Highway
25 corridor. We're not looking at routes, remember. We're
26 not taking the Foothills' alignment. We're looking at a

Dr. Mathews
Dr. Rickter
Mr. Bouckhout
Dr. Vaartnou

1965

1 broad corridor. Dr. Carl Rickter would perhaps respond
2 to that. He measured the miles.

3 DR. RICKTER: Well, I'll
4 try that one, Mr. Bouckhout. That mileage is via Jakes
5 Corner.

6 MR. BOUCKHOUT: I see.
7 That explains it. Dr. Vaartnou?

8 DR. VAARTNOU: I guess I
9 could reply on revegetation potential. I think that,
10 in my estimation, that's the most important parameter,
11 the site of unique species, and plant communities.

12 The only thing that we could
13 ruin is the unique plant communities and if there's
14 unusual or rare species. The rest we might be able to
15 restore everything there. Maybe some dryland areas
16 takes more time, specifically if the slopes is cut in
17 to deep hillsides and some areas where the soil from
18 distant sites that we don't know yet what species is
19 going to grow there because of chemical poisoning
20 effect on the plant species there.

21 But normally one way or
22 other way, there is plant species that could grow there.
23 If we consider the agronomic varieties, we could forget
24 the revegetation in Yukon. If we primarily concentrate
25 the native plants and we're able to restore the surface
26 soil conditions as before, saving the soil, and I guess

1 some people call it top soiling,
2 using the surface layer containing the stolons, root stock
3 and seeds, native seeds, right in on the top layer of
4 the soil, and using it on the surface layer again, we
5 should expect to restore the vegetation within five
6 or ten years there.

7 Some tundra areas, according
8 to Dr. Cliff(?) can restore within three or four
9 years. So, I cannot see no reason why the tundra area
10 is getting higher rating for--more sensitive than some
11 other areas on revegetation point of view. I guess that's
12 all.

13 MR. CHAIRMAN: Thank you
14 very much.

15 DR. MATHEWS: I'd like to
16 make one clarification on that. Again, as a botanist
17 perhaps, I would lay a great deal more weight perhaps
18 on the few localities where there were rare species,
19 but in regard to looking at the total environmental
20 picture of the potential effects of pipeline construction,
21 I don't think I can underweight concerns such as a
22 potential forest fire which could have many repercussions
23 throughout the environment on many other parameters.

24 Similarly, forest productivity,
25 I'd like to throw in some component of commercial value.
26 I think it's valid when there is some forest industry near

1 Watson Lake. The point is if I threw all my weight
2 behind a rare species, all the other parameters would
3 have virtually no weighting at all, and you could yourself
4 perhaps make the decision on the basis of rare areas
5 alone, or you could take any combination of parameters
6 and make a decision on those alone if you think others
7 are not particularly pertinent.

8 But I think the value in
9 evaluating seven parameters is simply the fact that
10 you can combine them any way you want and reweight
11 them any way you want in order to come up with an
12 ultimate decision.

13 MR. CHAIRMAN: Mr. Trevor
14 has a question, but I would like a little elaboration,
15 I think, on the ranking of 161 for vegetation. I can
16 understand--you know, compare it with the fisheries
17 resource, 171. I'm wondering what were the criteria for--
18 what was the logic for giving vegetation such a high
19 ranking? Was it value of the vegetation or the aesthetic
20 value of the vegetation?

21 DR. MATHEWS: Excuse me.
22 I think I'd like to go back to the original methodology.
23 The actual number of points allotted to vegetation was
24 arrived at by a general consensus polled between the
25 six members of the study team. So, it's not my reflection
26 particularly. It's an average reflection of what everyone

1 thinks vegetation perhaps might be worth in terms of
2 potential impacts relative to the other parameters.

3 In that regard, it is only
4 the opinion of our team. Again, you could reweight
5 them differently.

6 MR. CHAIRMAN: I'd like to
7 pursue this, if I can. I understand how it was arrived
8 at, but one of the prime values of vegetation is the
9 aesthetic value of the vegetation. You've also taken
10 into consideration forest productivity and also the
11 interference with rare species, but I would like to
12 get a better impression of whether or not the vegetation
13 parameter is also a surrogate for an aesthetic parameter.

14 DR. MATHEWS: Well, I think
15 certainly vegetation is a strong component of any
16 aesthetic factor as well as maybe vistas or rivers that
17 are clean, or any number of other environmental factors.
18 But as I mentioned before, aesthetics as such, I did
19 not feel qualified to make a judgment in regard to how
20 important that might be between the different routes,
21 given the time limitations we had.

22 I think it's a relatively
23 fair reflection of perhaps overall concern, and the
24 danger is when any one specialist gets to look at
25 environmental impacts, he tends to rate his own discipline
26 perhaps higher, because you understand the potential

1 impacts greater, but as a relative overall consensus,
2 I think the weighting is a fair approximation of the
3 value it should receive.

4 MR. CHAIRMAN: Mr. Trevor?

5 MR. TREVOR: To get back
6 to the remarks you were making about the forest fire
7 aspect, Dr. Mathews, I gather that you did apply a somewhat
8 high rating to that factor; is this correct?

9 DR. MATHEWS: I gave it a
10 rating of twenty points, the same as unique vegetation.
11 One of the reasons for that is the fact that it's considered
12 over every mile of every route because the forest fire
13 suppression priority map covers all the Yukon and all
14 of the corridors.

15 So, there's a high mileage
16 multiplication factor to come out in the ultimate value,
17 whereas some of the other parameters are only measured
18 for small segments.

19 MR. TREVOR: That's quite
20 true. I accept that, but that does not recognize the
21 extreme difference in risk between a fire caused as a
22 result of a pipeline and mother nature herself. On that
23 very point alone, I would suggest that you should apply
24 a very low rating, since mother nature was--well, as of
25 this time today, we've had sixty fires this year caused
26 by mother nature.

DR. SCHILDER: Dr. Mathews,
I have a question. It is a qualifying question. You have
explained in your brief that Liard/Tintina corridor finished

1 third because that alternative lost a lot of points within
2 the Sixty mile River--

3 DR. MATHEWS: Gained a lot
4 of points.

5 DR. SCHILDER: --road segment.
6 Okay. My question would be, where did the Klondike route
7 lose the points because it finished the last one?

8 DR. MATHEWS: You mean where
9 it gained the most points. The Klondike has the greatest
10 number of points for vegetation, the greatest number of
11 impact points. In other words, the impact on vegetation
12 is greater. This is largely a reflection again of the
13 fact that it is considerably longer than any of the
14 other three routes.

15 DR. SCHILDER: So, I'm
16 suggesting that there are not any specific areas of
17 interest from the point of view of your criteria, or
18 parameters used, but that it mostly reflects only the
19 length of the route?

20 DR. MATHEWS: No, the
21 fact is included in that length is a large area of
22 grassland along the Klondike corridor, approximately
23 south of Minto, and many of those grasslands are on
24 relatively steep slopes and relatively narrow valleys,
25 and the grasslands have a fairly high impact rating
26 in those areas because of the potential of erosion.

1 If those steep hillsides
2 and grasslands were disturbed, that is also an important
3 factor.

4 DR. SCHILDER: Thank you.

5 MR. CHAIRMAN: In your
6 analysis, did you--you've already mentioned the sixty
7 mile tundra. Were there any more comparable difficult
8 areas that you found along the route?

9 DR. MATHEWS: Again, flying
10 over the lower Tintina section where you fly through the
11 St. Cyr range of the Pelly Mountains, you again get into
12 a very high valley with considerable tundra and some
13 alpine conditions in it. That certainly is another
14 sensitive area.

15 In regard to potential
16 for rare species or the preservation of rare species or
17 communities along the Tintina Trench route, both of them,
18 they have the McArthur Wildlife Preserve in common. That,
19 besides being a wildlife preserve, is a proposed I.B.P.
20 area for a large number of unique vegetation features
21 such as hot springs contained within it.

22 So, that is a sensitive
23 component for all the Tintina Trench routes. Of course,
24 the rare vegetation around Kluane Park and the I.B.P.
25 areas in the upper Alcan segment, sort of west of
26 Whitehorse, have a very high rare unique species component,

1 largely due to the Sheep Mountain, Slims River Delta
2 area, Duke Meadows and certain I.B.P. areas further
3 toward the border, and I would consider those very
4 sensitive.

5 In fact, that portion from
6 Kluane Lake west is the highest rated in terms of
7 potential impact on vegetation for the Alcan route, but
8 that is still outweighed in the overall analysis by some
9 of the other routes.

10 MR. CHAIRMAN: And your
11 analysis suggests that the total number--your total
12 impact analysis is very similar for the four routes.

13 DR. MATHEWS: The maximum
14 spread between first and last is no greater than thirty-
15 eight per cent.

16 MR. CHAIRMAN: And that is
17 mainly the biggest parameters here are the length of the
18 Klondike route and the alpine factor?

19 DR. MATHEWS: And tundra
20 areas.

21 MR. CHAIRMAN: And these offset
22 the unique species and the I.B.P. areas and so on around
23 Kluane Lake in the first hundred miles?

24 DR. MATHEWS: Yes.

25 MR. CHAIRMAN: Of the
26 Alcan Highway, yes. Okay, any more questions on vegetation?

1 Thank you very much then, Dr. Mathews. We'll move on to
2 the next section.

3 MR. PARKINSON: Well, that
4 finishes up the biological side. We'll move into the
5 physical side and start off with the geology. I'll turn
6 this over to Carl Rickter.

7 DR. RICKTER: You'll have
8 to excuse my raspy voice but I never was a microphone
9 fan. I like to be described as a jack of all trades
10 and a master of none. I'll level with the audience.
11 Some people know my movements in the Yukon, others don't;
12 and to bring everything to a common plane, my first
13 awareness of the Yukon was the ascent on Mount Logan
14 back in 1959 when we walked up the Kaskawulsh Glacier
15 to climb it, and walked back out by the Donjek Glacier
16 and lost all our gear in the Donjek River. That gave
17 me my first exposure of fear in the Yukon rivers.

18 In 1964 I returned to the
19 Yukon to do my masters thesis on the Dempster Highway,
20 roughly the first hundred miles. It involved not only
21 geological work but also botanical work, paleological
22 and I did make a few wildlife observations at the same
23 time.

24 More recently, with the
25 Geological Survey of Canada, I mapped the Nadaleen
26 River map sheet which is 106C if I remember my NTS

1 designations properly on a photogrametrical point of view
2 or surficial geology.

3 Shortly after that, I worked
4 on the Yukon Resource Atlas for two years and became
5 familiar with all the geological information both
6 academic, engineering, resource type of geological information
7 for all of the Yukon, and the information is very
8 abundant.

9 Finally, I'll level with the
10 audience, I worked on the Alcan Gas Pipeline proposal
11 last year for the Gulf Interstate Engineering Company in
12 their initial application for Judge Litt.

13 So, I have perhaps an unfair
14 advantage in knowing too much, compared to my other
15 cohorts and that's probably reflected somewhat in my
16 analyses.

17 Some of the things I would
18 like people to be aware of before we get into this
19 discussion is, I took the chilling point for the Alcan
20 presentation to be forty miles or thereabouts from the
21 Yukon boundary to arrive at all my conclusions regarding
22 perma frost degradation and related items.

23 For the Klondike route,
24 I assumed the line would be chilled on the Highland, on
25 the Sixtymile road, and if the information of Foothills
26 still holds, I understand they're going to let the line

1 warm up from about North Klondike River on towards Stewart
2 Crossing. So, that's something I had to take into
3 consideration when I did my analyses.

4 So, I have a chilling factor
5 on all my corridor routes. My parameters are very linear
6 oriented, but there are one or two that are not and
7 had the same problems as presented by other individuals
8 before me.

9 Something about the data.
10 There is ample geological material for the Yukon, depending
11 on the scale you're willing to look at it. At the one
12 to 250,000 basis, the bedrock geological maps for the
13 Yukon have been completed for quite some time. For the
14 surficial geology you can--there is a bit more of a
15 dilemma. We have fairly good coverage in some areas,
16 and only one to a 1,000,000 overview in other areas,
17 but it's enough to give you a good idea of what's going
18 on, if you use a few geologic principles.

19 I would also like to point
20 out to other people in the audience that of the 3,000
21 or so geological documents I looked at for the Yukon
22 Resource Atlas, there is a lot of material in those
23 documents which are oriented to vegetation, wildlife,
24 trapping, hunting, forest use.

25 I do suggest that when
26 the Yukon Resource Atlas comes out, that people methodi-

1 cally comb the disciplines, other than their own, to see
2 where the information lies. The mining exploration in

3 Yukon since the turn of the century has brought on
4 a wealth of observations. There are thousands of
5 assessment file reports in the Takhini offices which
6 describe the local geology of a particular mining play
7 and inadvertently they always throw in a few of their
8 observations along the way, depending on who the geologist
9 is, and how addressed he is on the environment.

10 Some of the other geological
11 reports in particular are quite thorough on the natural
12 history point of view. We did such things as take
13 climatic records at some of the drill sites for oil and
14 gas in Eagle Plain, in case you're interested in that
15 concern.

16 Well, we finished with the
17 general principles. The next thing people will want to
18 know is the importance factor and what parameters are
19 looked at, and the parameters I picked were the ones
20 I felt were important and also ones I thought I had
21 the ability to do. It's as simple as that.

22 So, if I've missed something,
23 it's because I don't feel I know enough about it to make
24 an analysis of it. The following parameters were looked
25 at. There were seven of them. Unique geological features,
26 I gave that sixteen points. Seismicity, I gave that ten

1 points because of the probability of the occurrence of
2 a seismic event.

3 Permafrost receive fifty-
4 five points, and erosional processes related to perma-
5 frost. Large landslides and slumps received ten points
6 because we're again playing a game of gambler's roulette.
7 Service erosion by known permafrost generated processes
8 received thirty-three points. The impact of gravel
9 and binder material extraction for lining the pipeline
10 ditch, building roads, paths, et cetera, received thirty-
11 three points.

12 The impact on the pipeline's
13 presence for encouragement of the exploration for non-
14 renewable resources received twenty-eight points, and
15 also included in that is where the pipeline could
16 interfere with a few placer mining claims.

17 Those are the points I've
18 assigned in collaboration with Vladimir Schilder.
19 We're not at arm's reach, but I need all the help I could
20 get.

21 MR. CHAIRMAN: Excuse me,
22 Mr. Rickter, I missed the first two. What were they?

23 DR. RICKTER: Unique
24 geological features, sixteen points. Seismicity, ten
25 points.

26 MR. CHAIRMAN: Thank you.

1 DR. HUGHES: The second to
2 last?

3 DR. RICKTER: The second to
4 last was the impact of gravel extraction in crude terms.

5 DR. HUGHES: Third last?

6 DR. RICKTER: Pardon me?

7 Surface erosion
8 by non-perma frost related processes, and when I use
9 permafrost in this case, I mean the absence of ice as
10 opposed to permafrost erosional processes with the
11 presence of ice. I know there's an intergrade zone in
12 between, but we have to draw a line somewhere.

13 Okay, now Dr. Hill was
14 wondering what happened to the Klondike route in my
15 analysis. Simply, it's this; the length killed it.
16 630.5 miles of incremental addition of impacts, minor
17 in many cases, but there were a few major ones. I
18 can just spell them out to you as to what the problems
19 of the Klondike route were.

20 A problem of aggregate
21 extraction in the Sixtymile area is moderate. They're
22 going to either have to blast or scrape or else truck
23 it long distances. The Klondike route also will encourage
24 some exploration for natural gas in the Laberge Basin
25 which is rated by the Canadian petroleum geologists as
26 potential reserves of 4.1 trillion cubic feet. Whether

1 it's there or not remains to be seen. It has to be tested
2 with the drills. Bringing in drilling rigs and all the
3 rest of it has considerable environmental impact. There's
4 no way out of it.

5 The Laberge Basin extends
6 roughly from Carmacks right through to approximately
7 Jakes Corner, more or less follows the Yukon River.
8 There are one or two target zones for natural gas in
9 that basin. The Lewes River group and the Laberge group
10 I think are the prime targets, are both in the mesozoic
11 succession.

12 There has been considerable
13 initial work on the exploration of the Laberge Basin
14 by the geologists in Calgary and there are several reports
15 on file with the Oil and Gas, Minerals Division of the
16 Department of Indian Affairs.

17 The Klondike route also
18 interferes with potential placer operations in and around
19 the Dawson area. Whether they ever come to pass or not,
20 I'm not willing to make that guess, but there is a
21 potential.

22 There are also a number of
23 coal outcrop showings in the vicinity just north of
24 Fox Lake on the ridgetop where they propose to put the
25 pipeline. I cannot help but give them a few impact
26 points, despite the fact there has not been much work done

1 on them to date, but as you know, we do have a mine at
2 Carmacks which is mining coal and these are the same
3 formations, and the coal occurrences appear on Dr.
4 Wheeler's map of the Whitehorse map sheet.

5 I'll leave it to Archer
6 Cathroe to tell us whether they are any good or not.

7 Finally, the seismicity
8 extends to as far as the Whitehorse area. The impact
9 is still above ten per cent G on the acceleration formulas,
10 which is enough to cause some minor problems. So, a
11 bit of seismicity also helped push the score up.

12 Finally, part of the route
13 was not glaciated. In the non-glaciated areas of the
14 Yukon, we have an array of unique and rare geologic
15 features, some of which have taken up many pages of
16 explanation and some of the work of Dr. Owen Hughes.
17 So, I cannot ignore those either. The rare, unique
18 features along the Alcan route, for example, are not
19 nearly so numerous. The Laroque Glacier at Sheep Mountain,
20 for example, got a few points and the landslide traversed
21 to the bottom of the Sheep Mountain also got a few points.
22 But these are insignificant compared to the array of
23 periglacial features which exist between the Alaska
24 border and roughly Stewart Crossing. You have to ascribe
25 them something, and certainly more than any of the things
26 that you see elsewhere which were quite common to most of

1 British Columbia and southern Yukon.

2 So, that Dr. Hill, is what
3 happened to the Klondike route. My best route is the
4 Robert Campbell Highway route, and if I threw out
5 importance altogether and just did the calculations of
6 impact only, it was still the best route.

7 If I took my total impact
8 with the importance factor for each route and divided
9 it by its mileage, here are the figures I come up with.
10 The Robert Campbell Highway has an impact per mile of
11 .1411. Of the Klondike Route, it's .1437. Of the
12 Liard Route, it's .1580. Of the Alcan route, it's .1606.
13 I think that tells you something right there. The mileages
14 are definitely a significant factor.

15 The Dempster, by the way,
16 just to keep the people jittering on their toes here,
17 had a rating of .1589 to .1929, depending on how I
18 looked at it. So, in one particular instance it was
19 about the same as the Earn River route. Now, if I
20 took the Robert Campbell route and threw out that
21 troublesome geotechnical section between the MacMillan
22 River and Stewart Crossing which is also bothering the
23 biologists and went via Carmacks instead, here's my
24 impact per mile rate for either the Robert Campbell or
25 for the Klondike route, it doesn't matter which, and
26 multiply that times the additional 52.5 miles of length

1 that would add to the Robert Campbell route, it still comes
2 up the winner. So, no matter how I play the dice game,
3 Robert Campbell wins.

4 So, I think I've probably
5 talked enough about the routes in general, and I'll open
6 the floor for discussion.

7 MR. CHAIRMAN: Thank you
8 very much. Mr. Trevor? No. Possibly we could be
9 enlightened on these unique geological features. Are
10 these the tores that--

11 DR. RICKTER: The tores and
12 the ultraplation terraces on the Sixty Mile Highway plus
13 one feature called a tump were definitely a big factor.
14 Also were the sand wedge polygons which exist between
15 the junction of the Klondike Rivers and roughly
16 McQuesten. Also tossed into the fray were the excellent
17 display of the McConnell age moraine at Carmacks. That's
18 one of the best examples of the McConnell moraine that
19 I know of. Dr. Hughes may know of some better ones,
20 but I felt it was pretty unique.

21 Furthermore, just in the
22 Braeburn Lake area, there is an amazing disintergration
23 ice complex which is the best I've seen in the Yukon.
24 That, in a nutshell, are the unique features, but the
25 periglacial ones at the north end of the line were the
26 ones that really counted.

MR. CHAIRMAN: Thank you.

Would you also explain your logic for assuming the Sixtymile route would be chilled?

DR. RICKTER: The documents presented by Foothills Pipe Line Company concerning the possible plans for bringing the pipeline in from Alaska or taking the gas from the Dempster out to Alaska had it chilled both ways. So, I'm willing to accept that fact. If Foothills wants to comment on that, that's up to them.

Frankly, it won't make much difference on the Sixty Mile route anyhow, whether it's chilled or not. I feel between the Yukon River and the crest where they could traverse through some frozen, sloping bogs, in geological jargon, might be more of a problem if the line was not frozen, but Dr. Owen Hughes could probably comment on that better than I can. It certainly wasn't a big factor.

By the way, the permafrost factor for the Klondike route was by far the most favorable, but it was so snowed under by these other things, it just couldn't see its way to the top of the heap.

MR. CHAIRMAN: Also, on the Alaska Highway, how critical was the Forty Mile Post for the heating point? Would your ratings change significantly if it was cool for the hundred miles as originally proposed?

DR. RICKTER: I don't care

1 to get into this in detail because we've heard two or three
2 days of dialogue versus the problems of settlement as
3 opposed to jacking up the line, and I treat them both as
4 roughly the same evil as far as my analysis was concerned,
5 and I propose to leave it at that.

6 If other people are more
7 knowledgeable on these problems, I'll welcome their
8 discussion.

9 MR. CHAIRMAN: Thank you.
10 Dr. Hughes?

11 DR. HUGHES: I'd like to go
12 back to a point that Mr. Wykes made much earlier in which
13 I didn't fully understand until I spoke to him later.
14 This is his question of mitigation. Now, I realize
15 that you have to work on some sort of basis, and therefore,
16 you can say well, let's forget about mitigation and
17 assume that mitigation will be applied with full fervor
18 on all routes.

19 But I think it may be
20 possible to identify some kinds of problems where the
21 mitigation procedures seem to be fairly well developed
22 and some kinds of problems where the mitigation procedures
23 are much more in doubt and maybe permafrost may apply
24 in this. This comes in in another instance for the
25 Tintina/Liard route. One mitigation factor that has
26 been suggested on a good number of instances is route

1 location, but then for that southern part of the Tintina
2 before you break out to the Liard Plain, route selection
3 is very much circumscribed because of the narrowness
4 of the route.

5 It does seem to me that
6 we're going to have to try to look at this mitigation
7 thing and from your point of view, how do some of these
8 factors rate in terms of the possible effectiveness
9 of mitigation, as you see it?

10 DR. RICKTER: Well, maybe
11 I had a built-in bias, being a biologist, and having
12 worked in a spell of engineering geology in my career.
13 I chose a line of least resistance to be honest with
14 you, and my concept of a corridor is much narrower
15 than that of the biologists around me. I really looked
16 at a route about the same width as the alignment sheets
17 of the Foothills map and there's no way out of it.

18 As a geologist, that's the
19 sort of thing that you would normally do, as to try and
20 get the pipeline through there with the least amount of
21 geotechnical hassle as possible. In the case of the
22 Pelly/Tintina River area, the logical place to put the
23 pipelines from an injuring point of view is up on the
24 silt terraces that face southwest above the Pelly River,
25 and you wouldn't want to put it down ^{on} the flood plain.

26 When I did my analysis for

1 that area, I assumed that was where the pipe was going
2 to go, whether people like it or not.

3 So, I apologize to the
4 audience, but my concept of a corridor is much narrower
5 than other people's. It's only a few miles and not
6 ten or twenty kilometers.

7 DR. HUGHES: I wondered
8 if you might agree or comment on which of the routes
9 really has the widest latitude in terms of terrain suitable
10 for pipeline construction from a geologic point of view?
11 Which allows the largest lateral movement in order to
12 allow mitigation of site specific concerns?

13 DR. RICKTER: Well, again,
14 I think you'll see why Robert Campbell becomes an obvious
15 winner, from my point of view. Just look at the topographic
16 map and you'll see that three lines are trying to--or two
17 or the routes, the Klondike and the Alcan, are trying to
18 squeeze their way through the narrow valleys of the
19 Cassiar Mountains, and the Robert Campbell suddenly
20 just gorges out onto a very monotonous drift plain or
21 plateau and just from a physical geographers' point of
22 view, looking at the maps, that would be their inclination
23 to pick.

24 The Tintina Valley is actually
25 quite a wide valley. It's much wider than the valley
26 which goes through the Cassiar Mountains.

1 DR. HUGHES: So, you would
2 judge that where some freedom of lateral movement might
3 be necessary for mitigation of very site specific concerns,
4 that the Tintina/Robert Campbell route appears to allow
5 the greatest latitude?

6 DR. RICKTER: With the
7 exception of two little small areas in that troublesome
8 Crooked Creek to Little Kalzas Lake area, I would say
9 that the Tintina is the obvious winner.

10 DR. HUGHES: Thank you.

11 MR. CHAIRMAN: You suggested
12 a variation down to Carmacks. What sort of mileage
13 addition would that be to the--

14 DR. RICKTER: As I said,
15 that was about fifty-two and a half miles farther and
16 it depends on the actual location itself, but I just
17 took the measuring wheel and moved it along the road
18 to arrive at mileage. It could be ten per cent more
19 or ten per cent less.

20 MR. CHAIRMAN: Now, forgive
21 me for my geographic knowledge. Does that follow highways
22 all the way then?

23 DR. RICKTER: I believe it
24 does. There may be some advantages to a few shortcuts
25 along the route, but I did not consider those at this
26 stage of the game. It was just a hurried half hour look

1 at the maps before I tossed in my analysis.

2 MR. CHAIRMAN: Maybe it's
3 fair to ask Mr. Parkinson possibly sometime in sum-up
4 you could comment on this diversion in terms of the
5 high scores that were given to wildlife because of the
6 increase in accessibility on the route as laid out.

7 DR. RICKTER: I'll let Jack
8 handle that.

9 MR. CHAIRMAN: Would it
10 change your overall ranking of routes significantly if
11 the Carmacks diversion was proposed?

12 MR. PARKINSON: You're asking
13 that question particularly with respect to the wildlife
14 factor which rated the--which influenced the other two
15 alternatives there?

16 MR. CHAIRMAN: Yes. As I
17 understand the significance that the wildlife factor
18 was rated high on impact through the area where there
19 was no highway because of increased accessibility into
20 a virgin area.

21 MR. PARKINSON: Yes, that
22 is true, and probably the most important factor there
23 is that in those areas you're creating new access. In
24 the other area, Carmacks over, access is already there,
25 so that you're not creating a new situation in that
26 regard.

Mr. Parkinson
Mr. Romaine
Mr. Ellis
Dr. Rickter

1990

1 MR. CHAIRMAN: So, in fact,
2 wildlife rankings probably would change if we went through
3 Carmacks?

4 MR. PARKINSON: They would
5 change with respect to the one segment that you'd be
6 circumventing.

7 MR. CHAIRMAN: Possibly you
8 could comment later on when you have a chance to look
9 at all your numbers whether or not that would be a
10 significant change or not.

11 MR. PARKINSON: We'll take
12 that under advisement and report back.

13 MR. CHAIRMAN: Thank you.
14 Any more questions from the panel? Any questions from
15 the advisors' table?

16 MR. ROMAINE: Mr. Ellis has
17 a couple questions, I believe.

18 MR. ELLIS: There was a
19 comment regarding the unique geological features I think
20 on the Klondike route. I would just like this clarified
21 as to what's their relationship in respect to the
22 pipeline right-of-way? Are they going to be destroyed,
23 affected or cannot a potential right-of-way be moved
24 around them?

25 DR. RICKTER: In the case
26 of the Sixty Mile tores, I'm advised by Dr. Hughes they

1 can be avoided, but the L.T. planation terraces, I
2 believe, some of them will have to be crossed. In the
3 case of the sand wedge polygons, until we have a look at what's
4 underneath the peaty mat of that monotonous piece of
5 terrain between Flat Creek and McQuesten, we have no
6 way of knowing whether we are going to avoid them or
7 not.

8 But from those that are
9 visible from road exposures, the suggestion is they're
10 extensive and they will certainly go through some of
11 them. The other problem there is the type section of
12 the Reid moraine along the Stewart River and there's
13 just a gambler's game as whether the that of geologic
14 section which is quite an important one to geologists
15 would be also ruined.

16 We have queer ways of looking
17 at things, I must admit, and we're looking at it from our
18 own point of view, but that's what I feel at this present
19 moment.

20 MR. ELLIS: Thank you. With
21 respect to your comment on the route affecting the placer
22 mining at Dawson, how will this occur?

23 DR. RICKTER: Part of the
24 Klondike Valley has not been dredged yet, and it's just
25 a matter of when the price of gold becomes high enough,
26 before they become interested in going after the rest of

1 it. So, you know, the gambling game with that commodity
2 and you take your pick and arrive at your conclusion.

3 MR. ELLIS: Yes, my thinking
4 there was the placer miners seem to be up in the creeks,
5 and the obvious route is along the Klondike Valley itself
6 which is downstream from their operations. This is the
7 current status quo anyway.

8 DR. RICKTER: Yes, but there
9 is still this large track of terrain in the vicinity of
10 Hunker Creek and maybe even upstream as far as Flat
11 Creek, which is still there to be tested. There's also
12 the Yukon River itself, which has long been speculated
13 as being worthy of another placer attempt. I believe
14 somebody had some grandiose plans on that idea just within
15 the last one or two years.

16 MR. ELLIS: Thank you.
17 What basis did you use for giving the borrow--I'm using
18 the word borrow. I believe you had aggregate removal.
19 Is this the same, and why are you giving it such a high
20 rating of I think thirty-three, was it on your grading
21 scale?

22 MR. CHAIRMAN: You'd like
23 to comment, Mr. Parkinson?

24 MR. PARKINSON: Yes, I'd
25 like to just add a word regarding the placer mining.
26 In our evaluation, placer mining is not really an environ-

1 mental consideration with respect to the pipeline and
2 it should be kept in that perspective. I'd just again
3 like to draw back to the point that we have undertaken
4 a comparison of the environmental feasibility of
5 pipeline corridors.

6 We're not looking at routes.
7 We haven't been able to get to that level of refinement.
8 If you just reflect for a minute on the fact that in
9 six weeks we've looked at something in the order of
10 1,500 miles of country. So, we're not able to get
11 too refined.

12 DR. RICKTER: Okay, I'll
13 just add a little to what Jack says. It's true, we're
14 not assessing the economic impact ^{on the} / placer miners.
15 But if they reroute a pipeline because of the presence
16 of a mine opening up with major considerations, you're
17 looking at more environmental disruption in the process
18 of pulling up the pipe and relocating it. There is
19 always that remote possibility.

20 Accordingly, I did not put
21 too much weight on that in my analysis, but it did get
22 something. The aggregate extraction or the borrow pit
23 situation was one that really bothered me, and it's one
24 I played with for a long while, but when you consider
25 that erosion is looked at from two viewpoints, it's
26 really perma frost erosion as well as normal erosion.

1 We didn't feel that the
2 aggregate situation was out of line because the exploration
3 for aggregate is never a clean environmental proof
4 operation. In fact, it has had a history of people going
5 out with bulldozers and tearing up the ground until they
6 found it. I hope things had reached a more refined state
7 than that, but there are also other considerations with
8 aggregate extraction. One is the noise of trucks, just
9 for an example.

10 One of the things I considered
11 in the aggregate situation was that if the trucks are
12 hauling more than five miles on steep grades, it had
13 more of an impact overall environmentally than the
14 trucks only hauling a few hundred yards. By knowing
15 where the granular resources lie on almost all my routes
16 to within one or two or three miles in most cases, I
17 was able to make this sort of an estimate. I may be
18 out of line on one or two estimates, but I'm sure it's
19 counterbalanced by an assumption the wrong way on maybe
20 the next one. It will all come out in the wash to about
21 the same answer, I'm sure.

22 The other thing is that
23 there is, if you look at it in the global context of the
24 Yukon, aggregate extraction is a very big bind north of
25 the limit of glaciation. On the Dempster Highway, in
26 particular, north of the Chapman Lake area it becomes

1 an increasingly big headache and they're either torn
2 between pulling it out of the rivers, or else making their
3 own aggregate by blasting rock. The environmental
4 impact of that is not pleasant as well. As you saw on the
5 Ridgecrest Road which runs along the rim of the Eagle
6 Plain Basin, they have done a certain amount of quarrying,
7 extensive scraping to obtain aggregate, and when they go
8 to put the pipeline of the Dempster along the foothills of
9 the Richardson, it's going to be ^aconsiderable hassle along
10 that score.

11 So, I looked at the aggregate
12 extraction from the global point of the whole Yukon in
13 assessing my points, and I'll be the first to admit that
14 maybe my significance or importance factors are out of
15 line, but as I pointed out before, I did the analysis
16 without doing any importance factors at all, and I still
17 came out with the Robert Campbell Highway as the winner.

18 MR. ELLIS: Thank you.

19 MR. CHAIRMAN: Mr. Lyons?

20 MR. LYONS: Mr. Rickter, I'm
21 looking at your rating scale and particularly at the large
22 landslides and slumps, and I wonder if maybe that's
23 slightly low. I wonder if you could maybe elaborate
24 on those factors a bit.

25 DR. RICKTER: Well, the
26 number of large landslides within the context of this

1 corridor, the corridors being considered for the Yukon,
2 are not all that many. It's certainly not like another
3 Monashee Mountains in British Columbia where everytime
4 you turned your back, you have another major landslide,
5 giving B. C. Hydro the willies.

6 Coupled with that is the
7 probability of a landslide occurring within the life span
8 of the pipeline, and coupled with that is that if the
9 landslide does occur, will it disrupt the pipeline or
10 will it just simply bury it? These are all taken into
11 consideration and if you want to know where I think the
12 landslide areas are, which are going to be the big
13 troublemakers--it's not the one along Kluane Lake.

14 The two areas, as far as
15 I can tell, from my observations and from reading the
16 geological reports, are the junction of the Flat Creek
17 with the Klondike River. It's an old slump on the
18 southwest side, if I remember my orientations properly.
19 It consists of a number, not a number, but a hundred
20 or so feet of gravels overlying two or three hundred
21 feet of glacial lake silts. It's down this escarpment
22 the pipelines have to go. If that fails, we're looking
23 at a pipeline rupture, rather than just a burial of the
24 pipeline.

25 So, that certainly had a
26 big impact on my mind. The other place is the MacMillan

1 River. Dr. Robert Campbell, not to be confused with the
2 classic Robert Campbell, memoir for the Glenlyon map area,
3 105L, remarks:

4 "On the slumping of glacial lake clays into
5 the MacMillan River, periodically damming up
6 the river".

7 When we overflowed the MacMillan
8 River, I saw one such slump on one of the meander bends
9 and so I can only assume that the action is still going
10 on, and they're of the scale large enough to break a
11 pipeline. So, those two areas in particular had some
12 bearing. But when you look at for the Yukon as a whole,
13 away from the St. Elias Hinterland and away from the
14 Wernecke Mountains which is the other--MacKenzie
15 Mountains which is the other big landslide district
16 in the Yukon, we aren't really looking at that that
17 much in the way of landslide, major landslide hazards.

18 Geologically the Yukon
19 plateau is of stabler neisic rocks and these are
20 apparently more confident than the surrounding strata
21 in the Wernecke Mountains where some very large landslides
22 are now appearing in the geologic literature. I'll be
23 honest with you, I made some of the observations myself
24 in there in my work as well as Kerry Isbicker
25 work in the Geological Survey of Canada, as well as
26 Dr. Stewart Blussin's work in the Geological Survey of Canada

Dr. Rickter
Mr. Lyons
Mr. Bouckhout
Mr. McNally

1998

1 MR. LYONS: One associated
2 question regarding perma frost and slumps; is that in
3 that same classification there or do you include that
4 under perma frost or hydrology?

5 DR. RICKTER: Minor slumping
6 associated with perma frost is in my perma frost category.
7 Things of a mega scale are what I'm considering in land-
8 slides, things of several million cubic yards or at least
9 five hundred thousand yards.

10 MR. LYONS: Thank you.

11 MR. CHAIRMAN: Anyone else
12 like to comment on this particular section. Mr.
13 Bouckhout?

14 MR. BOUCKHOUT: Just one
15 brief question. Did the possible amount of required
16 bedrock blasting on the various routes play any part
17 in your assessment?

18 DR. RICKTER: Where the
19 route was constrained and obviously there was no place
20 for it to go, yes. But where there was room to out deke
21 it, no.

22 MR. CHAIRMAN: Mr. McNally.

23 MR. MCNALLY: Just a quick
24 one. I have indications of slides on the Big Kalzas
25 River. Were they of any concern to you?

26 DR. RICKTER: That's the

1 same area of Dr. Robert Campbell's report, yes. That's
2 where I gave the points for probable problems. As I
3 said earlier in the day, the area between the MacMillan
4 River and the common bite of the north and south Crooked
5 Rivers is, I consider, the biggest geotechnical impact
6 on the Tintina routes.

7 But these are overcome by
8 the relatively easy terrain to the southeast of that,
9 and that's how the final scores tallied up, and even
10 that troublesome area can be bypassed by Carmacks by
11 the looks of the indication of things. So, there is
12 an alternative.

13 MR. CHAIRMAN: Mr. Hernandez?

14 MR. HERNANDEZ: I'd like
15 to ask a question on what is known about the ice distribution
16 of the permafrost in the Klondike, the northern half
17 of all the three Klondike alternates?

18 MR. CHAIRMAN: We'd call that
19 the Sixtymile , would we?

20 MR. HERNANDEZ: Sixty Mile
21 and Klondike Highway to where they start diverging, whether
22 it follows the Klondike or the Robert Campbell.

23 DR. RICKTER: Okay. Well, I'll
24 take a crack at it and I think I'll let Dr. Owen Hughes
25 finish it because he's the expert of the Klondike area,
26 and he knows a lot more about it than I do.

1 In all the dredging operations,
2 they were founded by ice in the Yukon or in the Klondike
3 River area, as well as in the creeks and they had to do an
4 extensive thawing program to pull the gold from the river
5 bottom. In areas, excess ice, from my observations,
6 in the general southern part of the Dempster corridor at
7 very few locations. I think one of the bogs near Benson
8 Creek, if I recall rightly, pulled ice with the corridor.

9 There are indications of
10 ground ice at several other places; the Dempster Highway
11 from plagial like cracks in some of the borrow pits,
12 but they were obviously at great depth. I think Dr.
13 Owen Hughes can answer that question better than I can.
14 So, I'll turn it over to him.

15 DR. HUGHES: Mr. Chairman,
16 I think I'm here to be advised rather to advise, am I
17 not? I would comment, if you wish.

18 MR. CHAIRMAN: I leave it
19 up to you, Dr. Hughes.

20 DR. HUGHES: Well, I think
21 we can say that for the Sixty Mile route, that is for
22 the Sixty Mile Road, permafrost problems are very minimal.
23 For the stretch from the Yukon River to Flat Creek on the
24 low terraces of the Klondike River, we know that it's
25 mostly permanently frozen underneath it, but there's
26 been assorted agricultural development, hayfields and so

1 forth, and the evidence suggests that unless you get
2 crowded in pretty close to the south wall of the valley,
3 that there's relatively little thaw unstable material.
4 It's mostly fairly few feet of silt with low ice content
5 over gravels that are thaw stable.

6 Then in the long stretch
7 from the top of the Flat Creek hill until you go back
8 down in to the Stewart River, it's virtually all coarse
9 grained materials with local depressions where there
10 are slope wash sediments concentrated and those slope
11 wash sediments have high ice content, but these are
12 mostly short intervals and the ice ridge sediments themselves
13 are relatively thin. I wouldn't venture a guess on just
14 how many miles of troublesome terrain you might encounter,
15 but it would be a few miles rather than a few tens of
16 miles.

17 MR. CHAIRMAN: Mr. Carson
18 Templeton?

19 MR. TEMPLETON: Dr. Hughes
20 mentioned that there was no trouble. I assume that you're
21 talking about thaw settlement when you say that, is that
22 right?

23 DR. HUGHES: I'm talking
24 about an absence of thaw susceptible material. That is,
25 materials that will--very little material that will
26 subside if it thaws, or if it has any ice content then

1 that will lead it to liquify and flow if it should thaw.

2 I think you can almost treat
3 potential erosion problems on the Sixty Mile Road in the
4 same way that you would treat the potential erosion
5 problems in a non-permafrost area. This isn't to suggest
6 that there couldn't be any of the kinds of problems that
7 you get on similar terrain in a non-permafrost area.

8 MR. TEMPLETON: Well then
9 you're saying that it could be either a chilled pipeline
10 or not chilled in that section?

11 DR. HUGHES: Yes, as well
12 as being low in thaw stability, I'd have to guess that
13 it'd be low in terms of frost heave susceptibility. This
14 would depend a little bit on location, but if you're
15 staying very close to the ridge crest, then you're
16 staying in pretty well grained soils.

17 MR. CHAIRMAN: Could I
18 interrupt this discussion.

19 MR. TEMPLETON: Sorry.

20 MR. CHAIRMAN: As he says,
21 the panel is here to be advised and we're happy to show
22 a display of knowledge every once in awhile. Could we
23 break that off then and see if there's any other advisors
24 who wish to comment on the geological aspect. No. Any
25 from panel staff? Dr. Schilder?

26 DR. SCHILDER: Mr. Chairman,

1 I have a question for Mr. Rickter. As you know, the
2 panel has expressed a number of times interest in major
3 river crossings. My question is, would you consider the
4 Yukon River the most difficult to cross from the point
5 of view of engineering problems and potential environmental
6 impact as implied by the expected geological conditions
7 in the area near Dawson?

8 DR. RICKTER: It's a tall
9 order, but just from my many looks at that crossing, I'm
10 horrified frankly from the engineering point of view. Maybe
11 that's overreaction, but I can't help but think that they
12 are going to have trouble with bedrock on either bank
13 to set the pipe in, and possibly one channel or the
14 other on the islands which the pipeline crossing probably
15 would go. It may be quite deep. I'm afraid I would
16 like to have somebody else field the question. Maybe
17 Derek Smith would care to take a crack at it.

18 MR. CHAIRMAN: I believe
19 Mr. Bouckhout would like to comment.

20 MR. BOUCKHOUT: Just one
21 very brief comment. We have subsequent to the initial
22 preparation or designation of the line which you may
23 have been working with had more detailed looks at the
24 area and in particular the Yukon River crossing. In
25 our assessment to date we feel that perhaps the Yukon
26 River crossing that was shown on that line is likely

Mr. Bouckhout
Dr. Rickter
Mr. Parkinson
Mr. Smith

2004

1 not the best one, that another crossing should be
2 selected.

3 DR. RICKTER: I'm not sure
4 what crossing you had on your line to be honest with you,
5 because I've never seen the maps showing it. The maps
6 that I received from Foothills through the panel showed
7 only the Dempster route, and there was no line going
8 west to the Alaska border.

9 We, ourselves, looked for
10 possible route crossings and I think that Derek will
11 have a crack at telling you where he thinks it should
12 go.

13 MR. PARKINSON: This is
14 Derek Smith who has dealt with the hydrological side
15 of our assessment and will comment.

16 MR. SMITH: I'm certainly
17 not going to tell you where to put your pipeline across
18 the Yukon River, but I'm going to--

19 MR. CHAIRMAN: Could you
20 please speak into the microphone please.

21 MR. SMITH: I would make a
22 comment on the crossing itself. I think it's one of the
23 most difficult on the entire evaluation. I believe
24 this is the point where the Yukon River or the lower
25 Yukon River is being restricted by bedrock on the west
26 side, is narrowest and has an extremely high discharge and

1 velocity at this point, and physical problems of the
2 bedrock on the west bank, coupled with the hydraulic
3 properties at the point, make it an extremely difficult
4 crossing.

5 It would be very interesting
6 to know the depth, for example, of the river at this
7 point and whether the bottom is bedrock. I think an
8 alternate would have to be picked. Certainly in our
9 evaluation I would rate that the maximum value and make
10 comments on that site specifically.

11 MR. CHAIRMAN: Have you
12 a further comment, Mr. Bouckhout?

13 MR. BOUCKHOUT: That depends,
14 Mr. Chairman. Do you want to get into a discussion at
15 this stage on a Yukon River crossing or shall we pass
16 it off?

17 MR. CHAIRMAN: Well, I think
18 the next topic is hydrology. Maybe it's included in that
19 topic, is it, Mr. Parkinson?

20 MR. PARKINSON: Well, Mr.
21 Smith has taken into account the necessity of crossing
22 rivers in his comparison, and he will be commenting on
23 them, but as he mentions, we're not selecting routes.

24 MR. CHAIRMAN: Okay. Before
25 we get into that, I'd like to ask Mr. Nowlan whether or
26 not he's free tomorrow or what is your timetable. This

1 evening we're going to hear Chief John Joe Kaye and if you
2 can be here tomorrow, that's fine. If not, we'll fit you
3 in between now and five o'clock.

4 MR. NOWLAN: I would appreciate
5 if you could. I have a very short brief.

6 MR. CHAIRMAN: Okay. Well,
7 would you like to give it now then and we'll interrupt
8 the presentation from Envirocon.

9 MR. NOWLAN: Mr. Chairman,
10 my name is Danny Nowlan. I am the owner of the Yukon
11 Game Farm on the Takhini Hot Springs Road.

12 I would like to express a few
13 thoughts on the construction of a gas pipeline through
14 the southern Yukon and along the Dempster Highway. So far
15 as I am concerned, either the Alaska Highway route or the
16 Klondike route is acceptable. The gas pipeline must
17 follow an established right-of-way staying at least within
18 one mile of the right-of-way or either the Alaska Highway
19 or the Sixty Mile Road and Klondike Highway. My reason
20 for this requirement is that this would most of the known
21 lambing areas, falcon aeries, and previously undisturbed
22 terrain.

23 Concerning the proposed
24 gas pipeline along the Dempster Highway, I would like to
25 make the following recommendations. To avoid disturbance
26 of the Porcupine caribou herd, speed limits on the Dempster

1 should be reduced to thirty miles per hour year around.
2 All traffic should stop when caribou are crossing the
3 road. I do not think that convoying traffic is a solution
4 to the problem of disturbance. Movement of pipeline
5 construction equipment should be carried out during the
6 summer when the caribou are not in the area.

7 The main danger to the
8 continued existence of this great caribou herd, as I
9 see it, is hunting. Caribou cannot become accustomed to
10 traffic if whenever they see a vehicle, that vehicle
11 stops, people jump out and caribou are shot at. It
12 is common knowledge that our national parks at times
13 have traffic bumper to bumper, yet herds of animals graze
14 quite undisturbed on the roadsides. A five year moratorium
15 on hunting of all species of game within five miles of
16 either side of the Dempster Highway should be brought
17 into effect. This should apply for both Indians and
18 Whites. To discourage illegal hunting the use of all-
19 terrain vehicles and snow machines in this ten mile wide
20 corridor should be banned.

21 During the five year hunting
22 moratorium the Yukon Game Branch should be provided with
23 funds to carry out an intensive study of the caribou.
24 This research should be carried out by the Game Branch
25 in order to obtain an unbiased report. At the end of the
26 five year closure, controlled hunting could be instituted

1 if Game Branch findings showed the herd could stand it.

2 My personal feeling, however,
3 is that migrating barrenground caribou have a much greater
4 aesthetic value than for food value. It is not economically
5 justifiable to drive even from Dawson City to hunt them
6 considering the cost of gas; it would be cheaper to buy
7 beef.

8 I have a few other thoughts
9 to express. One is that if the Yukon Game Branch had
10 had adequate funds and staff in the past, there would
11 not be this present rush to obtain badly needed information.
12 May our government learn a lesson from that.

13 The second point is that
14 a great many people will flock up here with this project.
15 When they don't get pipeline jobs, many of them will
16 no doubt try to live off the land by hunting and trapping,
17 except in the guiding business it is no longer possible
18 to make a living off the land. To prevent heavy hunting
19 pressures on all our wildlife, the government should set
20 up a program to discourage people from coming north
21 without a job.

22 In summary, I feel a gas
23 pipeline can be built without environmental damage
24 if it stays along an established right-of-way. Controls
25 will have to be instituted and research begun to keep
26 the Porcupine caribou herd at its present level.

Mr. Nowlan
Mr. Trevor

2009

1 Thank you, Mr. Chairman.

2 MR. CHAIRMAN: Thank you.

3 Are there any questions from the panel? Mr. Trevor?

4 MR. TREVOR: Mr. Nowlan,
5 in your operation of your game farm, are there any
6 observations that you could give us which would support
7 your thoughts that animals can indeed accustom themselves
8 to the noise of traffic, the nearness of people, this type
9 of thing and that it's more the shooting aspect, as you
10 say, which is of importance?

11 MR. NOWLAN: I would say
12 absolutely, because I have to, for instance, shoot ground
13 squirrels which destroy my fields on my farm and I find
14 that I can shoot by my sheep or my goats, my mule deer,
15 and even the ducks on the small lake that I have on the
16 property. I also find that snow machines and motor
17 cycles affect the ungulates far more than automobiles,
18 and I find that if you come on them in a great rush at
19 a great speed, you can startle them with an automobile
20 or a truck.

21 If you drive the same speed
22 each day, they get used to it very quickly and this seems
23 to have absolutely no disturbing effects on them whatso-
24 ever.

25 MR. TREVOR: Thank you.
26

Mr. Templeton
Mr. Nowlan
Mr. Parkinson
Mr. Smith

2010

1 MR. CHAIRMAN: Any other
2 questions from the panel? Any questions from any of our
3 advisors on the brief just presented by Mr. Nowlan?
4 Mr. Templeton?

5 MR. TEMPLETON: I was wondering
6 why you suggested only a five year moratorium? Isn't it
7 good management to have that a permanent moratorium for
8 five miles of each side of the highway?

9 MR. NOWLAN: I have to agree
10 with you.

11 MR. CHAIRMAN: Any other
12 questions? Thank you very much then, Mr. Nowlan.

13 MR. NOWLAN: Thank you.

14 MR. CHAIRMAN: Mr. Parkinson,
15 would you like to continue with I guess your last
16 section, hydrology?

17 MR. PARKINSON: Yes, I'd
18 ask Mr. Smith to carry on with the description of the
19 criteria that he used and the way he arrived at the
20 ratings that he did.

21 MR. SMITH: Under the
22 component water, I chose to evaluate two criteria. One,
23 water crossings. This means lake crossings, any water
24 body crossings, streams, small streams, femoral channels.
25 Second, what I call potential
26 disturbance or sensitivity to the terrestrial flow regime,

1 and by this I mean the ground water flow, subsurface ground
2 water flow, interflow, and over land flow.

3 I was assigned 133 points
4 out of 1000 for this analysis group consensus. I admit
5 to being in a quandry as how to distribute these points
6 between my two parameters because the data base is
7 extremely poor and in the second case, Arctic hydrogeology
8 is an unknown entity and the effects of a number of things
9 which I'll bring up in the second part of this
10 presentation have not been properly evaluated.

11 Consequently, I rated them
12 at a ratio of five to one. I include terrestrial
13 hydrogeology and hydrology so that it's not overlooked.
14 Under water crossings, the following parameters are
15 considered to be key characteristics of a low impact
16 water crossing. The crossing must be of minimal
17 length and cross the water body at right angles, ninety
18 degrees, have banks and terrace slopes with a high
19 degree of natural stability and a strong protective
20 vegetative cover, be positioned away from meander bends
21 where stream thalwags impinge upon banks, be
22 positioned where stream panels display low progressive
23 movement, low current velocity and scour potential, and
24 low erosion and water quality degradation potential, have
25 no inherent special risk problems. By this I mean
26 high perma frost, off ice or soil stability risk, or flow

1 constriction risk.

2 Have a minimal length of
3 downstream watershed which will receive increased sediment
4 transporter depositional rates. This parameter depends
5 on the velocity and the gradient of the stream to a large
6 extent.

7 On the basis of these
8 criteria, the impact of each individual drainage channel
9 or lake crossing, and this included many of the major
10 femoral water courses were evaluated at reconnaissance
11 level. By reconnaissance, I mean that the Alcan route,
12 the Alaska Highway was visited on the ground and perhaps
13 ninety per cent of the stream crossings were evaluated.

14 The route of necessity
15 as described by Mr. Rickter was fairly site specific.
16 I also took the engineering viewpoint that the line
17 of minimal resistance would be taken if there was a
18 choice between a very good terrace, and one good bank
19 and a very bad bank of a stream, for example. We took
20 the obvious choices.

21 This, of course, would
22 affect the impact, the actual positioning. The very site
23 specific positioning will affect my impact ratings to
24 a great deal. For each route, I summarized the impacts.
25 Now, stream crossings are not a function of the length
26 of the route. This is one parameter, along with fisheries

1 that is the function of a number of streams, and we looked
2 at some in this viewpoint.

3 There's been a lot of discussion
4 here about methodology. It is unfortunate that perhaps
5 we couldn't have presented a slightly more comprehensive
6 outline or our methodology at the beginning. This was
7 certainly due to time constraints. We feel that the
8 methodology is logical, to a fairly large degree it's
9 subjective and this is again of necessity because of the
10 quality of the data.

11 Hydrometric data is missing
12 for a great number of watersheds or is extremely scanty.
13 It is my personal opinion that it is extremely difficult
14 to do detailed design of a river crossing based on one
15 or two years of data. We have conducted experiments
16 where we have compared--we've actually gauged water-
17 sheds and compared these to empirical formulas and computer
18 modelling techniques.

19 In one case in southern
20 Ontario, we had eighty-six years of meteorological data
21 and forty years of stream data. Based on the computer
22 modelling of that, we were still out by a factor of
23 three from the actual gauging data on the same stream.

24 Consequently when I was
25 in the field, or when we did reconnaissance levels, I
26 went through the following parameters. I'll do this

Where this information was available, we tried to accumulate peak discharge figures. Water quality. I think the major parameter here is not chemical, it's turbidity, and sediment load. Based on this, we evaluated each water crossing from 0 to 4 0 is nil impact. 1 is moderate. 2 is high and 4 is extreme.

1 in it. One other parameter which I evaluated and I thought
2 was quite important was the possible downstream alteration
3 or sediment effect length. How far is the stream going
4 to be affected? Where is the next low velocity zone and
5 where is deposition going to take place?

6 I must admit that the
7 sedimentological information in the Yukon is very, very
8 scanty and this was done more in a gut feeling than anything
9 else. One interesting example, we flew the Sixty Mile
10 River and there were two large vehicles, cats working in
11 the channel. This was not in the muck that was in I
12 take it an outwash deposit or a gravel deposit with a
13 high content of fines and we could follow the effect of
14 that sediment at least fifteen miles downstream and
15 the stream was the colour of the wall that's behind
16 us.

17 So, I think this is a very
18 important parameter and if there is a length parameter
19 in hydrology, this is it, that should be considered,
20 the downstream length. Based on these considerations,
21 the ranking that has been given you, the Liard/Tintina
22 becomes my first pick and that's really based on the
23 type of stream, and the number of streams. The Alaska
24 Highway, for example, was the highest.

25 I might mention that in
26 our impact analysis, we are evaluating construction impacts

1 and operational impacts. So, for example, I considered
2 Teslin Lake, Little Rancheria systems as being quite
3 sensitive and gave them a high rating, because of their
4 untouched nature and the potential for sedimentation
5 and problems there.

6 A glacial area such as the
7 Kluane Lakes area, White and Donjek, I would rate those
8 as being high as reflected in my component rankings
9 here on risk, on off-ice potential, on the instability
10 of the channel, on the scour depth problem, things like
11 this. So, the criteria used varies slightly because
12 of the scope of the impact analysis.

13 The second criteria that
14 I evaluated was something on the ground water flow
15 regime. There's been some discussion on this and
16 if anything, it's resolved the fact that no one has
17 gone out and monitored the ground water and interflow
18 and overland flow regime in the vicinity of a pipeline
19 under different perma frost conditions.

20 So, I looked at areas which
21 had different types of perma frost based on Carl Rickter's
22 data; discontinuous being given a higher rating because
23 of perhaps such potentials as higher icing potential,
24 perhaps an increase in the number of highly permeable
25 zones and the material that could cause or initiate
26 icing, and also on the slope parameter, and to a minor

1 extent I looked at lithology slope. I was looking at
2 hydraulic gradients. I was interested in hydraulic
3 conductivities, but I don't know if there's been an analysis
4 or a lab test done in the Yukon yet.

5 So, as I say, I don't know
6 the actual importance of this parameter. It hasn't been
7 studied yet, but I bring it to the attention of the
8 panel. Based on this, my ratings were low and did not
9 really alter in any significant way previous ratings
10 of perma frost and other terrain features and it's
11 included in that section. It's a linear component or
12 parameter and it's related on that--evaluated with that
13 in mind by the number of miles.

14 MR. CHAIRMAN: Thank you.
15 I notice that your rankings, the 1, 2, 3, 4 rankings,
16 are the same as the fish rankings, and you were mentioning
17 the sedimentation downstream as a length parameter. I
18 was wondering how much overlap there would be in terms
19 of double counting here between the effects on fish and
20 the water crossing parameter.

21 MR. SMITH: Well, I evaluated
22 each system on the basis of what velocity information
23 I had, what discharge information I had, the lithology
24 of the banks and the bed, and did a fairly subjective
25 analysis on the river reaches and the corridor that
26 the pipe might be going through to get a low, moderate or

1 high reading on this. The actual effect on the fish--I
2 just said the potential to increase sedimentation and
3 left it at that. The actual effect on the fish, I don't
4 know what fish are in the streams, and the actual fish
5 effects were taken up by the biologists.

6 We had quite a bit of
7 discussion about this, where does one impact end off and
8 where does the next one start, and we tried to resolve
9 most of them, I hope.

10 MR. CHAIRMAN: Thank you.
11 Any questions from the panel? Any comments from the
12 advisors? Questions? Mr. Klassen? No. Mr. Lyons?

13 MR. LYONS: Yes, I have
14 a question regarding swamps and muskeg terrain. I gather
15 you didn't include that in your rating, and I wonder
16 if you have any comments on the possibility of draining
17 swamps either intentionally for construction or by the
18 effect of the trench, particularly south of Teslin Lake
19 in that area?

20 MR. SMITH: In the Swift
21 River area or in Smart River?

22 MR. LYONS: Yes, the Smart
23 River I believe it flows into.

24 MR. SMITH: It's really a
25 parameter that wasn't evaluated and--

26 MR. CHAIRMAN: Could you speak

Mr. Smith
Mr. Surrendi

2019

1 closer to the mike.

2 MR. SMITH: Sorry. It was
3 a parameter that wasn't evaluated. I think it would have
4 been touched upon in the vegetation category and it would
5 have been touched upon in some of the physical parameters
6 such as erosion analysis, things like this. I might
7 remind people that what we are doing is not an environmental
8 impact assessment. What we are doing is a comparative
9 rating based on a number of major parameters.

10 So, I think water crossings,
11 which is a big, big parameter, and I'm studying those
12 and I'm rating those for different routes, there are
13 definitely minor parameters there we couldn't study.
14 One of them, for example, is the effect on existing ground
15 water utilization or the chemical water quality of river
16 systems. There's so little data available for this and
17 it's all on the Alcan route, that it would bias our
18 results in that direction. So, we didn't include these.

19 Even by including terrestrial
20 hydrology I'm pushing it.

21 MR. CHAIRMAN: Thank you.
22 Any other questions? Mr. Surrendi?

23 MR. SURRENDI: Yes. The
24 question I'd like to ask and perhaps it could go to both
25 Foothills and to the advisors. The discussion on the
26 Yukon crossing being extremely deep, very narrow and

Mr. Surrendi
Mr. Bouckhout
Mr. Kosten

2020

1 down to bedrock, it strikes me that--in my ignorance
2 perhaps it strikes me that this might be a reasonably
3 good spot to look at an aerial crossing. Could somebody
4 please comment on that?

5 MR. CHAIRMAN: Mr. Bouckhout,
6 would you like to comment?

7 MR. BOUCKHOUT: I'll have
8 Mr. Kosten, the manager of our construction department,
9 comment on that.

10 MR. CHAIRMAN: Thank you.

11 MR. KOSTEN: My background
12 is more construction than design but I'll try and handle
13 this one. An aerial crossing normally is a last resort.
14 It is much preferable to put any water crossing underground.
15 You get involved into special design, special steels,
16 and so forth because of the exposure to the cold during
17 the winter time and they're usually a headache.

18 Westcoast had one that fell
19 down, for instance. The presence of rock in a river
20 crossing--river crossing consultants will say if you've
21 got rock, then that may be the best place to put it because
22 it avoids any further scour and you don't have to put
23 it quite as deep.

24 MR. SURRENDI: I was just
25 curious. Is this phenomena of burying special in the
26 Arctic or in northern areas? I know that I'm from Alberta

1 and I've seen numerous pipeline crossings that are
2 above the water.

3 MR. KOSTEN: Yes, some of
4 them they wished they didn't have either.

5 MR. SURRENDI: I'm sorry,
6 what was that?

7 MR. KOSTEN: Some of them
8 they wished they didn't have either.

9 MR. SURRENDI: I see. Okay,
10 I'll be content with that.

11 MR. CHAIRMAN: Mr. Lyons,
12 you had another comment?

13 MR. LYONS: Yes, about
14 river crossings again. We've talked about the Yukon
15 crossing, but I wonder if there are any other major
16 crossings that you foresee as being a particular problem
17 or possibly needing over above ground crossing?

18 MR. KOSTEN: Well, we have
19 looked at all of the crossings along the Alcan. We've
20 developed designs for some of the typical ones. I'm
21 talking of the Alaska Highway route now. Most of the
22 crossings tend to be rather wide with a wide flood plain
23 in the Alaska Highway route and will require special
24 design for this, although the water course itself may
25 be quite narrow, but the crossing portion of it which
26 would have to have negative buoyancy or weighting or

Mr. Kosten
Mr. Lyons
Mr. Smith

2022/
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1 continuous weighting or concrete weights.

2 There is no particular problem.
3 One or two of them we think we might have another look
4 at before--this involves another location of the route
5 in the area. The particular one being the--what's
6 the first one? Is that the Donjek? The White River
7 at the far north.

8 As far as the water crossings
9 coming up the Klondike route and over to the border, there
10 are fewer of them. I don't think there are any particular
11 onerous ones that we have had had any information on and
12 we must admit it's rather sparse along that area as far
13 as what we do have.

14 The Yukon is the larger
15 one and I flew over it myself yesterday, as a matter of
16 fact, and I think that we might want to relocate that
17 one.

18 MR. LYONS: I wonder if
19 Mr. Smith has any comments on that, on the alternatives
20 as well?

21 MR. SMITH: We looked at,
22 of course, all of the major river crossings and a lot
23 of them I gave high ratings to. Some of them have
24 bank stability problems and really why I rated them high
25 was because of the lack of adequate geotechnical,
26 hydrometric and sedimentological data. We don't know

1 what's rolling along the bed or what it will do to a pipe
2 in the Yukon River. We don't know how fast the meanders
3 are progressing on the MacMillan or Stewart, something
4 like this.

5 So, there are major questions
6 which have to be answered. If anything, by my examples
7 and what I was saying, is I'm suggesting that a major
8 period of data accumulation is necessary before my
9 parameter of water can be properly evaluated.

MR. LYONS:

10 I wonder if I could return
11 to that drainage of swamps question. I wonder if Foothills
12 would care to describe the type of construction they do
13 in that type of area and what is the chance of drainage
14 of such a thing. For instance, is such a place ever
15 drained purposely for construction?

16 MR. KOSTEN: I have never
17 heard of it. Usually the problem that you're describing--
18 I'm not sure where you'd pump the water. It's normally
19 a low area that you run into this situation and swamp
20 where you have high water. I can't conceive of where
21 you would be able to pump the water in the normal type
22 of construction that's carried out in such an area.

23 Generally speaking our
24 current practice now is to build the line in such an
25 area in the wintertime, if it's extensive, and you put
26 weights on it and there's no problem. Draining a swamp

Mr. Kosten
Mr. Lyons
Dr. Rickter

2025

1 would be--I rather suspect and I wouldn't want to be tied
2 to this, but prohibitive economically.

3 MR. LYONS: Thank you.

4 MR. CHAIRMAN: Yes. How
5 many more questions do we have? Yes, Carl, I have you
6 down, but I'd like to get a timing question answered for
7 me. Okay, could we have one--I'd like to have the
8 submission of N.C.P.C.--I believe there's more information
9 out of yesterday's discussion that we'd like to receive
10 before we close. So, Dr. Rickter?

11 DR. RICKTER: This problem
12 of the muskegs and the slope that's been tackled in the
13 recent discussion, between Johnsons Crossing and almost
14 the point where the Swift and the Rancheria Rivers meet,
15 there are a number of things I refer to as sloping bogs.
16 I think the ecologists can reenlighten me as to what
17 their correct name is, but it's a sloping thick moss
18 mat. The trees are stunted that grow through it. It's
19 wringing wet.

20 At Swan Lake there's a case
21 of where they intersected one of these with a borrow pit
22 operation and it's obviously been a big headache to the
23 people who put the borrow pit there. It's been bleeding
24 with organic material and water and generally fouling
25 up the operations of their pit and they've progressively
26 moved farther and farther to one side to try and get away

1 from the problem. There are a lot of these sloping bogs.
2 particularly between Nesultin Bay and Swan Lake, and the
3 pipeline unfortunately in the alignment that's shown
4 goes through a lot of them.

5 As a result, I have some
6 fairly high erosion values for that section of the
7 route.

8 MR. CHAIRMAN: Thank you.
9 Would you like to present your information now, sir? Mr.
10 Yewchuk?

11 MR. YEWCHUK: My name is
12 Tony Yewchuk. I'm with Northern Canada Power Commission.
13 During our presentation and the question and answer
14 period yesterday, I believe it was questioned whether
15 there would be any interaction between the possible
16 pipeline along the Klondike Highway. Also, the Tintina
17 Trench route, Campbell Highway route with possible
18 hydro development.

19 I have looked at the Sigma
20 Report and some of the information that we have and as you
21 know, that information is fairly sketchy. It's not
22 studied to any great degree or in any depth but there
23 are possible interactions with a good number of the sites
24 that are listed here.

25 The only thing that I could
26 suggest would happen when a route is picked for the proposed

1 pipeline, the Northern Canada Power Commission and the
2 builders of the pipeline would have to get together to
3 work out the problems that they're mutually facing.

4 As to pinpointing exact
5 locations for hydro development, that's not possible
6 at this time again because of lack of study material
7 or indepth studies.

8 MR. CHAIRMAN: Thank you
9 very much. Are there any questions for Mr. Yewchuk?
10 Well thank you very much then for giving us that information.

11 I'd like to break off discussion on the Envirocon Report
12 now. I'd like to return to it later, because there are
13 a number of questions that arise. I believe we have a
14 pretty adequate knowledge of how the ranking was done
15 and how the scoring was done and we will look forward
16 to getting more information on some of the sensitivities.

17 However, this evening we're
18 going to break off discussion on the alternates and discuss
19 the Dempster in particular and I would like to wrap up
20 the discussion on the Dempster before we return to the
21 discussion of the alternates within the Yukon. I don't
22 know how long that will take, but we will proceed until
23 we're finished with the Dempster.

24 We'll reconvene then at
25 seven o'clock.

26 (PROCEEDINGS ADJOURNED)

1 (PROCEEDINGS RESUMED PURSUANT TO ADJOURNMENT)

2
3 MR. CHAIRMAN: Could we come
4 to order please. I would like to discuss the possible
5 Dempster link, so that any participants wishing to advise
6 us on this link, would you indicate that you'd like to
7 give us briefs, so we get an idea of how long the proceedings
8 are likely to be? Would you raise your hand? Russ Crum.
9 Chief Kaye I know. Mr. Romaine. Mr. Parkinson has some
10 information. Mr. Klassen, and Mr. Templeton.

11 Okay, I don't know how long
12 this will take. I suggest as a procedure that everyone
13 wishing to address the panel, do so, in brief form, and
14 then the panel and other participants will have a chance
15 to ask questions of clarification.

16 Our first participant tonight
17 is Chief Kaye from Old Crow. Chief Kaye will be speaking
18 in his Native tongue, as I understand it, and Mr. Grafton
19 Njootli will be translating for him. So, would you please
20 continue, Chief Kaye.

21 THE INTERPRETER: Mr. Chairman, the
22 Chief here says that he would like to know what your terms
23 of reference are.

24 MR. CHAIRMAN: Our terms of
25 reference as a panel are to report on the environmental
26 impacts expected on the Alaska Highway Pipeline proposal

1 put forward by Foothills (Yukon) Limited. The Minister of
2 the Environment has asked us for an interim report by
3 August the 1st on the major impacts, and we've also been
4 asked largely through requests from people in the Yukon
5 to hear information on what environmental impacts there
6 may be on other routes through the southern Yukon and
7 on the possible Dempster link.

8 THE INTERPRETER: Chief Kaye would
9 like to tell you, Mr. Chairman and members of the panel,
10 that he's here and he's speaking in his Native tongue,
11 and he hopes that you will carefully listen to what he
12 has to say.

13 First of all he said, Mr.
14 Chairman, he has not been consulted in any way, shape
15 or form about the construction of the Dempster Highway
16 from the Mackenzie Delta to Dawson City or visa versa.
17 Anything that's living in that particular route, the
18 Old Crow people would need. You would possibly--the
19 proponents of Dempster lateral would possibly build a
20 pipeline across rivers such as the Eagle River and he
21 suspects that damages might occur; thus affecting the
22 aquatic system in that particular river.

23 He is not only referring
24 to the aquatic species in the northern Yukon, but also
25 in that particular route he says that he would like to
26 preserve as much as possible the game, specifically the

1 moose and the caribou.

2 He says that the migratory
3 Porcupine caribou herd has been roaming the area of the
4 route, the Dempster lateral route, and that in the
5 spring time, in June, the Porcupine caribou herd migrate
6 northward to the breeding grounds and come to the Community
7 of Old Crow, and thus providing the necessary food for
8 the Old Crow people.

9 He says that not only the
10 Old Crow residents use this particular Porcupine caribou
11 herd for subsistence, but also the Native population
12 of the Mackenzie Delta also has relied on Porcupine
13 caribou herd.

14 He says he remembers/through
15 ancestors, that there was no such boundaries legislated
16 between the Yukon Indian people and he says, that people
17 who have helped themselves--the people in the Northwest
18 Territories, for instance, would amalgamate with the Old
19 Crow people at some time through the year and each of
20 these groups help the other group, if one group is having
21 a hard time.

22 He says his father--before
23 the Dempster Highway construction, he remembers he used
24 that area for trapping, hunting purposes along the
25 Dempster Highway route. Mr. Kaye says that he is not
26 only talking about the past and he would like to refer to

1 the future, that not only he but other people in Old Crow
2 will continue to use that particular area and raise their
3 families just as well as he is going to raise his family.

4 Mr. Kaye also states that he
5 is very much opposed to the construction of the highway
6 itself, that the pipeline is going too far and he says
7 that he wants to maintain that area and that the development
8 is obstructing his wishes. He said many years ago--I would
9 like to refer to many years ago again when he used to
10 trap in that area with his father when he was just a little
11 boy. He says he used dogteams and there was no such thing
12 as gasoline or skidoos or anything of the sort.

13 Such things as canned goods
14 was unknown at the time and that he only relied on what
15 was available on that particular area. Sometimes when
16 they used to go out trapping, they'd take out some
17 necessary items, grocery items, and when they do get back,
18 sometimes it is hard for them to pay up their debts
19 because sometimes the people find it difficult due to
20 harsh climates, et cetera, to get the necessary income
21 from the animals.

22 He's thinking about in terms
23 of jobs, if a pipeline goes through that area, he says
24 that it will be impossible for the proponents to get
25 people to be employed in that particular construction
26 because of lack of training, and there's no sufficient

1 time made available to train the Old Crow Native people
2 to become skilled pipeline workers.

3 He thinks that if you build
4 a pipeline along the Dempster Highway, he thinks that
5 this particular development would divert the migratory
6 patterns and behavior patterns of the Porcupine caribou
7 herd. He says that maybe the possibility exists that
8 some people may be interested in working on a project,
9 but he says that it seems to him that it is impossible.

10 Mr. Chairman, the Chief
11 would like to refer to the mineral and possible oil and
12 gas deposits that might be economically made available
13 to transmit into the Dempster lateral surrounding the
14 Eagle Plains. He wishes that some sort of royalties
15 would be made available to the Old Crow people if this
16 particular action exists.

17 A long time ago he says that
18 his ancestors had managed the land quite well. He says
19 that now the Government is doing the same thing, but he
20 says that another problem might arise regarding the
21 management of that particular area, if the construction
22 results in that particular area.

23 He wants to see--actually
24 he's not asking you, but he's telling you that there should
25 be a land claim settlement before any construction of
26 the pipeline going through the Dempster lateral. Some of

1 the policies that he is telling you now--but he'd like to
2 tell you about his father who had been Chief in the Old
3 Crow area. He says his father had been a very intelligent
4 leader in the past for the Old Crow people. In those
5 days there was no such thing as the English language. It
6 was in their own language that he's presently using now
7 that the Old Crow people used during times of political
8 situations, where they had to make policies. They did
9 it in their own Loucheux language.

10 He says his father knows the
11 land quite well politically, socially and otherwise, and
12 he says that his father made predictions for the Old Crow
13 people and the results were good. When he holds a meeting
14 with the limited number of people at the time, he told the
15 people that this is the way to hunt, this is way to set
16 a net, and this is the way to trap animals.

17 So, in this way, the Old
18 Crow people had survived in the area along the Dempster
19 Highway and other ancillary routes around there. For
20 the migratory routes, the caribou routes, he says that the
21 Old Crow people have survived with the advice of his
22 father, Chief Joe Kaye.

23 Chief Kaye would like to
24 indicate to you also that during those times of his
25 father there was no such thing as commercial items such
26 as nets or steel traps and that he referred at one point

1 in time there that the people were making fish traps out
2 of willows.

3 The Chief said that when he
4 was twelve years old, he said he remembered all these
5 things. Well, you were considered a man at the age of
6 twelve and he says that his father told him this is the
7 way you do this, this is the way you do that, and this
8 is why he's sitting here now. He says they look after
9 their animals quite well biologically and they had a
10 storage system, and he says there wasn't a White man
11 around to tell him what to do, and how to do this, and
12 how to do that.

13 He likes to point out to
14 you that this is still existing today. He figures that
15 if the proponent damages the area, it would make it
16 very difficult for the Old Crow people. He says some
17 of the stories that he wanted to relate to you about his
18 father's job; to use his political attitude and strength
19 and to get the Old Crow people to live the way they are
20 today.

21 He'd like to refer to some--
22 the social patterns now about the Old Crow people that
23 should have been gone before Lysyk but apparently
24 Mr. Kaye now would like to refer to the situation about
25 1930 now. He says that he hasn't--he's not interested
26 in social assistance and likewise, and he still remains

1 as a person who relies on the environmental subsistence.
2 He says if you go to Old Crow and begin to live there with
3 the people, you'd learn for yourself that this is still
4 going on and he says that this is the way he's raising
5 his children right now. He says not only him. He says
6 the other members of the Old Crow Indian band and non-status
7 Indians up there are doing the same thing. They are
8 still relying on the animals and the muskrats and the
9 caribou herd.

10 He would like to mention
11 the fact that there's lack of pipeline education again in
12 the village, and that if construction were to proceed,
13 he says that there would be no benefits at all from the
14 construction with regards to Old Crow. He says that if
15 they do hire a couple of guys from Old Crow, it will only
16 be just a short term unskilled work, and it would just
17 bring the worker from his traplines, and his interests
18 and his cultural way and traditional way of living.

19 He also points out the
20 fact that the White man is relying on the wages that
21 he is working for, and I guess he refers to the cash
22 income that exists in the world today, but in his world
23 there is no such thing as wage employment. He makes
24 his money by hunting and trapping, and Crow Flats is
25 the particular area and Dempster Highway.

26 There is a number of areas

1 around the proposed route there, the Dempster lateral,
2 that some biologists might not know, but some studies
3 would be done on it. Specifically the beaver, which is
4 situated near the rivers, located near the route, and he
5 would like that particular animal to be preserved.

6 He says during the fall and
7 winter, the Old Crow people do not do quite well in the
8 area south of Old Crow. He says they can always go to
9 Crow Flats and that's a place where people make the money.
10 He says he'd like to talk a little more about the area
11 around the boundaries there. He'd like to refer to that
12 boundary that I suggested, that boundary--the Alaska
13 boundary, and the pipeline that is existing now in
14 Alaska, and he says that the accident which happened last
15 Friday, thirty miles north of Fairbanks, can be a possibility
16 along the Dempster lateral.

17 According to this Inquiry,
18 as I indicated earlier to the panel here, that there were
19 a number of injuries resulting from pipeline construction,
20 and he thinks that that also is a possibility along the
21 Dempster lateral. People would be permanently crippled
22 and he's afraid that some people would die with the
23 construction. He doesn't know why all of a sudden some
24 White people came into the area, around the Eagle Plains
25 area, in 1960, and he's still like to know why they were
26 there. Maybe he doesn't know the answer, but I guess that

1 was for the purpose of northern development, and that
2 shows that there was no consultation with the Chief and
3 councillors for the area.

4 He said he found the reason
5 why they were there. He said that he went to work there
6 himself because that was the first wage employment he
7 ever had, and the wages wasn't very good, but he said
8 he seen tractors going across his father's traplines and
9 his own traplines in the Eagle Plains area.

10 He says his father used to
11 tell him there's going to be people coming in, strange
12 people coming into this country one day, and he said you
13 have to be prepared for it, and he said he didn't know
14 he said that. Now, he says, he sees why such a statement
15 was made to him by his father.

16 There's a number of things
17 that the Chief has requested, such as no pipeline until
18 land claims and then he knows the Old Crow position with
19 regards to land claims. This is not a negotiating procedure
20 but it's an element that the Chair might recognize; that
21 the Dempster lateral is obstructing the category
22 two areas of the Old Crow Indian land claim settlement.

23 He said the first school in
24 Old Crow was in 1950. This is the first time, the first
25 year, 1950, that Old Crow Native children begin to learn
26 about the English language and it was done by the

1 missionaries. There was no qualified teacher at the time
2 stationed in Old Crow. It was just missionaries running
3 the nurses station and stuff like that.

4 He said, prior to that, all
5 the children spoke the Loucheux language. So he says
6 around 1972 the students that comes out of Old Crow,
7 because there is no high school up there, comes into the
8 Whitehorse area to attend high school and thus are put
9 into a new type of atmosphere and they become adjusted
10 to the White man's way of living, as the term may be
11 used, the White man's way of living; and he said that
12 this is an introduction to the transition which we are
13 experiencing today.

14 He says the numerous students
15 that attended the Yukon Vocational Technical Training
16 Center to become familiar with truck driving, driving
17 heavy duty equipment such as tractors and graders, and
18 we have a few people up in Old Crow that do have the
19 knowledge, but are not certified to--they don't have a
20 piece of paper to say that they're cat skinners, but they
21 built the Old Crow Airport.

22 But there exists in the
23 Old Crow school curriculum that constitutes a drive to
24 get the younger students more aware that there's another
25 way of living besides devoting their time to this
26 technological age at the Crow Flats. It's there and these

1 children enjoy it. They want to know how to build snowshoes,
2 toboggans and stuff like that, and they seem to enjoy
3 this type of thing in the school curriculum. He thinks
4 that this is a very good system because if people like
5 Foothills hire people from Old Crow and Foothills fires
6 somebody from Old Crow or just lay them off after the
7 pipeline is constructed, that these people can always go
8 back to the land, but he says there wouldn't be very much
9 of the land left.

10 He says he'd like to thank
11 everybody there. He wants to refer to the proponent of the
12 Dempster lateral that if construction is to proceed, he
13 says that land claims should be settled, and through that
14 land claims settlement, that there is different categories
15 to talk about, and different controls of the land
16 management that has to be agreed upon in final terms
17 with the Government of Canada.

18 He says thank you very much.

19 MR. CHAIRMAN: Thank you
20 very much, Chief Kaye. Would you answer some questions
21 of the panel?

22 CHIEF KAYE: Sure.

23 MR. CHAIRMAN: Could you--

24 THE INTERPRETER: Is the panel
25 ready to ask the Chief questions? He is willing to
26 answer them.

1 MR. CHAIRMAN: Thank you very
2 much. The caribou herd in the past, has it fluctuated in
3 numbers greatly or has it stayed generally constant in
4 size?

5 THE INTERPRETER: Would you like
6 to repeat the question again, Mr. Chairman.

7 MR. CHAIRMAN: Excuse me,
8 I've got a cold. I'm struggling here. In the past,
9 has the caribou herd changed in numbers greatly, or has
10 it stayed fairly constant in size?

11 THE INTERPRETER: The Chief, in
12 answer to the question, Mr. Chairman, is that as far
13 as he can remember, that statistics show according to
14 probably the Canadian Arctic Gas studies that 110,000
15 caribou exist and he can believe that this is the case,
16 and that presently he thinks that the number is still
17 the same.

18 MR. CHAIRMAN: Chief Kaye,
19 if the Government decides to continue with studying the
20 Dempster lateral, can you give us advice on the best
21 way to carry out the environmental studies in co-operation
22 with your Band?

23 THE INTERPRETER: In answer to
24 the question, he says if that would be the case, he says--
25 with regards to the Porcupine caribou herd, he says they
26 don't react to the Old Crow people as much as they would

1 to development because this caribou have been in experience
2 with the caribou corrals, and they've seen human beings
3 before, but they haven't seen White skins with big
4 bulldozers and stuff like that.

5 MR. CHAIRMAN: Chief Kaye,
6 you mentioned that some--or am I correct in assuming that
7 you suggested that people from Old Crow would like to
8 work on a development like this in the North if the
9 jobs were permanent?

10 THE INTERPRETER: Mr. Kaye here says
11 that if the proponents are ready to construct a pipeline
12 along the Dempster Highway, he says that he wants as many
13 people from Old Crow to be employed as possible on a
14 permanent basis.

15 MR. CHAIRMAN: I'll have
16 one more question. I could ask several, but I think I
17 should let my colleagues have a chance. The question that
18 continually arises as far as the proposed pipeline con-
19 struction goes is that when the road is already there and
20 if the pipeline can be constructed at times when the
21 caribou are not in the area, what would^{be}/the effect on the
22 caribou? Would there still be a great effect on the
23 caribou?

24 THE INTERPRETER: Are you referring
25 to the pipeline or the highway?

26 MR. CHAIRMAN: No, assuming the

1 highway is there and has already had its effect, and there
2 is traffic on the highway, what further effect could there
3 be by construction of the pipeline if the pipeline was
4 constructed at times when the caribou were not using
5 that part of the range?

6 THE INTERPRETER: Mr. Chairman, he
7 referred to the studies that Council for Yukon Indians
8 had done on the caribou herd in Alaska. It decreased
9 from something like 270,000 to only 70,000--40,000 caribou
10 herd and there's a large decrease in that, and he say
11 that particular thing might happen. He says the effect
12 of the highway has already been done on the caribou because
13 the biologists--at one point in time this week I'd indicated
14 that there is a delay of the caribou during their
15 migration to the breeding grounds, and that's due to
16 obstructing them on the Dempster Highway, but he says
17 that if a pipeline is built, that would be worse. There
18 probably wouldn't be any more caribou left in that
19 area.

20 MR. CHAIRMAN: Thank you.
21 Are there any more questions from the panel? Mr. Trevor?

22 MR. TREVOR: Chief Kaye, I'd
23 like to ask a couple of questions on the trapping that
24 the Old Crow people carry out. Could you tell me how
25 much money this represents in a year for the Old Crow
26 people when we think about the muskrat and marten and the

1 various animals that are trapped?

2 THE INTERPRETER: He's not sure,
3 but maybe he could refer that to my statement which I've
4 presented to the panel last week sometime. Maybe it
5 isn't this one. Mr. Trevor, we don't have these statistics
6 right offhand, but there's--you know, we can say that
7 Mr. Charlie Able and Joe Peter last year went into the
8 Dempster area and got 167 martens and other fur in two
9 and a half months. That was from Halloween to January.
10 That was just an illustration of how people can use the
11 area in the future.

12 MR. TREVOR: Well, it's this
13 use that I was thinking about. Just how important to the
14 people of Old Crow is the trapping in terms of their
15 ability to sell the furs on the market?

16 THE INTERPRETER: I might as well
17 tell you now that due to lack of cash incomes and wages
18 in Old Crow, there is no such thing as employment except
19 for programs that are given out by government--the people
20 had used the area all last year for trapping, the whole
21 area. Even me, myself, I had thirty traps. I brought
22 it in from Crow Flats, and I couldn't set traps because
23 there's no place. It's all cleaned out. Every place has
24 been used.

25 So, the interest in the
26 trapping cycle, it's fantastic up there now.

Mr. Trevor
Mr. Wykes
Chief Kaye
Dr. Hughes

.2044

1 MR. TREVOR: Thank you.

2 MR. CHAIRMAN: Mr. Wykes?

3 MR. WYKES: I would like to
4 ask Mr. Kaye if he could tell us the other species of
5 animals or wildlife that are hunted and trapped by the
6 people of Old Crow in the vicinity of the Dempster Highway.

7 THE INTERPRETER: I assume that Mr.
8 Kaye doesn't know these type of studies, because he indicated
9 to you that he did a lot of trapping and fishing there,
10 and there's moose, Dall sheep, wolves, foxes, beaver,
11 muskrat, wolverine, lynx all along that particular area.

12 Of course, there's the birds
13 department where the peregrine falcons--it's irreparable
14 to the damages that could be done to it.

15 MR. WYKES: Are all those
16 species that you listed then either hunted or trapped
17 by the people of Old Crow from time to time in that
18 area?

19 CHIEF KAY: Yes, there's
20 a large interest in trapping due to the inflation that
21 we experienced in the last couple of years.

22 MR. CHAIRMAN: Dr. Hughes?

23 DR. HUGHES: Chief Kaye, are
24 there at present any residents of Old Crow employed either
25 by the Yukon Forest Service or by the Yukon Territorial
26 Game Department on a permanent basis, or are there any

1 people in this training program to be trained as forestry
2 technicians or game management technicians?

3 THE INTERPRETER: Mr. Chairman, the
4 Chief just informed me that there's no game wardens. The
5 R.C.M.P. has been acting game director for Old Crow since
6 they've been in existence in Old Crow and there's no
7 attempt to educate Old Crow Indian people to become game
8 wardens along the Dempster Highway.

9 With regards to the forestry
10 question, he also said he was sorry to say that Forestry
11 Department had transferred Native people from Whitehorse
12 to go up to Old Crow to operate the forestry department
13 up there.

14 DR. HUGHES: Thank you.

15 MR. NJOOTLI: Maybe I can refer
16 back to my document that I presented to you just to make
17 clear in your mind what I've recommended to you about the
18 game wardens. I'd ask you, Dr. Hill, and the panel, to
19 recommend to your respective Minister to mandate the
20 Territorial Government to get at least four people out
21 of Old Crow, regardless of age, to train them to patrol
22 and to continue this basis of the Dempster Highway, whether
23 there is no development or not, whether the Dempster
24 Highway is not completed or not.

25 There should be someone--
26 some sort of surveillance on both the border due to the

1 fact that the Native people in the Northwest Territories
2 have the right to sell wild meat commercially, contrary
3 to the subsistence of Old Crow.

4 So, I think some sort of
5 surveillance should be imposed on those routes there, the
6 215 mile range that the pipeline would be obstructing.

7 MR. CHAIRMAN: Could I just
8 clarify that, Mr. Njootli? Are there different rules
9 for people in the Yukon and the people in the Northwest
10 Territories? Are the people in the Northwest Territories
11 allowed to hunt and sell meat while your people are
12 not?

13 MR. NJOOTLI: That's true.
14 We're not allowed to sell wild meat in the Yukon. We
15 don't believe in that either. So, if you look in the
16 "Vancouver Sun", the ad department, you'd see that there's
17 a whole bunch of lists of wild meat from the Mackenzie
18 Valley, Mackenzie Delta there for sale.

19 MR. CHAIRMAN: Yes, I think
20 I've seen it on the menu at the Eskimo Inn in Inuvik.
21 We had a recommendation this afternoon for I believe it
22 was five miles each side of the Dempster Highway that
23 no hunting be allowed in order that the caribou would
24 not become afraid of that area. I believe it was thought
25 that because cars go along the highway, people would hunt
26 from the highway and therefore, the caribou would become

1 very wary of the road, mainly because of the shooting rather
2 than the road itself.

3 So, the recommendation was
4 made that there would be a no hunting zone by anyone five
5 miles each side of the highway. Could the Chief give us
6 his opinion on whether the supposition was right, that
7 in fact the caribou would become very wary of the road
8 if hunting was allowed and they would become far less
9 wary if there were no hunting from the road?

10 THE INTERPRETER: In answer to
11 that question, there would be a ten mile surveillance,
12 that would be five miles on each side of the road. The
13 Chief's comment to that statement said the five miles
14 is insufficient because of the migratory patterns of the
15 caribou, of the large area that the caribou uses to
16 survive. This five miles is insufficient. I have other
17 words for it, but I'm trying to be as informal as possible.

18 He also stated that it could
19 be possible that ten miles on each side might be sufficient
20 with exclusive hunting, fishing and trapping rights for the
21 Old Crow Indian Band. Because--in the instance of Alaska,
22 he says that there was a five mile right-of-way I think
23 at--that was imposed--this person had testified that at
24 the Old Crow hearings that the right-of-way for Alaska
25 was five miles and the Alaska Native people were not
26 allowed or had no right to hunt, to trap or fish along that

1 corridor. I guess the Chief hopes that this will not be
2 the case here in the Yukon.

3 MR. CHAIRMAN: Yes. Could I
4 pursue a little bit further in terms of--the person this
5 afternoon was suggesting that the combination of the road
6 and the shooting from the road would scare the caribou
7 off and the caribou would be very wary of the road because
8 of the shooting from the road.

9 He suggested that the caribou
10 would be far less wary if there was no shooting at all from
11 the road, and I was wondering because the Chief knows the
12 caribou well, whether or not he feels that the caribou
13 would act that way? Whether or not the no shooting would,
14 in fact, allow the caribou to come familiar with the
15 road and allow them to pass the road better?

16 CHIEF KAY: The Chief indicated
17 that if there was any shooting to be done, that of course
18 there would be a diversion of the pattern of the caribou
19 and might eventually go into Northwest Territories, and
20 that the Old Crow people would never see these caribou
21 again. So, you have to take into consideration which
22 direction these caribou are going. For instance,
23 Carcross was named after a caribou crossing, and there's
24 no caribou to cross there anymore, and this might be
25 a possibility too along the Dempster Highway.

26 MR. CHAIRMAN: Would anyone

1 else like to ask the Chief some questions? Russ Crum,
2 would you like--Mr. Romaine? Mr. Parkinson? Mr. Klassen?

3 MR. KLASSEN: Just one question,
4 Mr. Chairman. Mr. Joe, you mentioned the preservation
5 of beaver along the Dempster area. What sort of preservation
6 do you have in mind? Were you thinking about the starting
7 up of management programs by the Game Branch there or just
8 enforcement to ensure that no one other than the Old Crow
9 group that traps in that area take the beaver that occur
10 there?

11 THE INTERPRETER: The Chief's
12 answer to that question is that in the spring time when
13 the ice breaks up and there's water clearance, from the
14 lakes, the beaver migrate from the lakes to the river and
15 visa versa in the fall time. He says during those periods
16 there shouldn't be any sort of construction going on.
17 That would be during the fall and the spring.

18 MR. KLASSEN: Thank you.
19 I take that then to be a restriction that should be
20 imposed on any further construction through the area.

21 THE INTERPRETER: Yes, you have
22 to consider the spring time north of the 60th parallel
23 to that--it's not the same spring as in Vancouver. It's
24 up in the Arctic Circle.

25 MR. KLASSEN: Yes, thank
26 you.

1 MR. CHAIRMAN: Mr. Hernandez
2 or Mr. Templeton? Mr. Bouckhout? By the way, what is
3 your policy on hiring local people?

4 MR. BOUCKHOUT: I think, Mr.
5 Burrell, our vice-president of corporate development would
6 be better to answer that particular question.

7 MR. BURRELL: The policy of
8 the company with regard to hiring is that preferential
9 hiring will be given to Yukoners. When two people have
10 equal abilities, the Yukoner will definitely get that
11 opportunity.

12 We will also be providing
13 training. We have been providing training in the past,
14 and we'll be accelerating that training to give Yukoners
15 the opportunities to take advantages of the appointment
16 opportunities that are available.

17 MR. CHAIRMAN: Could you
18 tell me, out of interest, how long it takes to train a
19 permanent member of your staff for operating compressor
20 stations? Presumably there's more than one person, but
21 the range of time required for that training?

22 MR. BURRELL: It would really
23 vary depending upon the type of job available and also
24 depend upon the background which the individual had, but
25 we have been providing training to Native people in what
26 we refer to as the Nortran Program, and they have a number

1 of them been training now for approximately five years
2 and during that period they have advanced to positions
3 of technicians. One has become a welder. I would say,
4 depending upon the position, two years would probably be
5 a good time for the maintenance areas; probably a little
6 longer on the technical areas depending upon the education
7 and the background.

8 MR. CHAIRMAN: Thank you.
9 Does panel staff have questions? Mrs. Archibald?

10 MS. ARCHIBALD: Yes, I'd
11 like to ask Chief Kaye whether the people of Old Crow
12 only hunt the caribou in June when they are near the
13 Old Crow area, or whether they hunt the caribou on their
14 winter range as well?

15 THE INTERPRETER: What's the last
16 part of your question as well?

17 MS. ARCHIBALD: Do you hunt
18 the caribou on their winter range? Do you hunt them
19 in the wintertime or just in June when they're nearest
20 to Old Crow?

21 THE INTERPRETER: To the question,
22 the Chief had indicated that the Old Crow people are
23 presently still going as far as the river can give them
24 access to. Going south from Old Crow to follow these
25 caribou herds, and we don't spot these caribou herds,
26 so we don't know where they are some of the time. So, you

1 have to find them and sometimes it takes you many miles
2 away from your community to find these animals.

3 MS. ARCHIBALD: Do the
4 people of Fort McPherson and Aklavik hunt the Porcupine
5 caribou in the wintertime traditionally?

6 THE INTERPRETER: Traditionally the
7 Fort McPherson people have, mutually with the Old Crow people,
8 have managed corrals. That's many thousands of years ago,
9 but however, if you're talking in recent periods, which
10 would be about a hundred years ago, they take about at
11 least five hundred caribou out of the herd per year.

12 MS. ARCHIBALD: Would that
13 be in the Dempster Highway area?

14 THE INTERPRETER: Yes, that would
15 be the Dempster Highway area.

16 MS. ARCHIBALD: If I could
17 just ask Mr. Klassen a question. Can the people from the
18 N.W.T. hunt in the Yukon and sell the meat in the N.W.T.?

19 MR. KLASSEN: The people
20 who have traditionally hunted in what is now the Yukon
21 Territory, in those communities bordering the Yukon
22 Territory, retain the right to hunt on this side of the
23 border, but I do not know the status of that game once
24 it goes into the Northwest Territories.

25 I was talking to Mr. Hoefs
26 about that and the information we have is that possibly

Mr. Njootli
Mr. Klassen
Ms. Archibald
Dr. Schilder
Chief Kaye

2053

1 sales take place. If that is the case, then under our
2 Ordinance it would be illegal, but if the meat is taken
3 in the Yukon Territory for their own consumption, that's
4 a legal act, of course.

5 But if they take it across
6 the border and sell it, this is something that we're going
7 to have to pursue with the Northwest Territories
8 authorities. From the time that I spent in the Northwest
9 Territories and that was a few years ago, the Ordinance over
10 there may have changed; at that time meat could only be
11 sold to other holders of general hunting license, other
12 people of usually Native status.

13 MS. ARCHIBALD: Just one
14 last question for Mr. Njootli. Do the Natives in Alaska
15 also hunt the Porcupine caribou herd?

16 MR. NJOOTLI: No, I believe
17 the Alaskans have their own caribou herd.

18 MS. ARCHIBALD: Thank you.
19 That's all.

20 MR. CHAIRMAN: Any more
21 questions from staff? Dr. Schilder?

22 DR. SCHILDER: Mr. Chairman,
23 I have a question for Chief Kaye. The question is would
24 you encourage your people from Old Crow, especially the
25 younger members of your Band, to take advantage of various
26 trainings in order they could get better money and jobs

1 when an opportunity occurs?

2 THE INTERPRETER: I don't even know
3 your name, but the Chief would like to answer your question.
4 I don't have my glasses on either.

5 MR. CHAIRMAN: It's Dr.
6 Schilder.

7 THE INTERPRETER: He says that
8 there has been some attempt by Canadian Arctic Gas and
9 Nortran to pick up some guys in Old Crow, take them down
10 to Rocky Mountain House, train them on pipelines. But
11 that attempt went to the extent where discrimination
12 took place on the training site, and that there's a number
13 of people in Old Crow that were involved in the training
14 and they're back there in Old Crow and they're not doing
15 anything because they were not treated right, and he
16 said if you want to pursue any more of these training
17 programs, some of these situations should be cleared
18 up out there where these northerners have to cope with
19 outside already trained people like Mr. Burrell.

20 DR. SCHILDER: Thank you
21 very much, Mr. Chairman.

22 MR. CHAIRMAN: Are there
23 any questions or comments from the floor? Mr. Parkinson
24 has a comment.

25 MR. PARKINSON: I would like
26 to ask the Chief a question regarding fish. Do the

1 people of Old Crow fish in the rivers close to the
2 Dempster, or is the fishing done closer to the village?

3 THE INTERPRETER: With regards to
4 the question, the answer would be that the Chief--due to
5 the already existing pollution, there is no such thing
6 as fishing going on and that further development would
7 cause more pollution. Not mercury. It's already there,
8 but he's afraid that other things might result from the
9 construction.

10 So, there isn't very much
11 fishing going on because we believe that the mercury can
12 affect the human beings.

13 MR. PARKINSON: Do you have
14 any idea where the mercury comes from?

15 THE INTERPRETER: The Chief says
16 he would like to have some fish to eat, but due to these
17 undesirable consequences that he says that he didn't
18 major in chemistry or anything like that. So, he doesn't
19 know what's going on. It's probably from some sort of
20 development, he said, coming from the other side. Possibly
21 from the Mackenzie region going into the Old Crow River.
22 He says that there's possibly some coming down the
23 Porcupine River already and that no studies have been
24 done on that. At least the Old Crow people haven't been
25 informed on the Porcupine River. We were just informed
26 on the Old Crow River.

1 MR. PARKINSON: Thank you
2 very much.

3 MR. CHAIRMAN: I will ask the
4 Chief if he has anything to say in summation. Before I
5 do, I'd like to invite both Chief Kay and you, Mr. Njootli,
6 to stay and participate in the discussion. There are
7 other people wishing to speak on the Dempster link and
8 we'd appreciate your participation. So, does the Chief
9 have anything to say in summation?

10 THE INTERPRETER: Okay. He says
11 he represents a certain amount of people, approximately
12 two hundred people and he says that he has been successful
13 in representing them so far and he said during this
14 time, this kind of policy-making situation, he says that
15 he's not familiar with. Talking to sort of treaty signing
16 situation, I guess he says he wishes you good luck in
17 your inquiries and that he hopes that you will listen
18 to him and consider his recommendations. He says thank
19 you and that's his summation.

20 MR. CHAIRMAN: Thank you,
21 very much. I will now call a coffee break and we'll return
22 with the brief of Mr. Crum.

23
24 (PROCEEDINGS ADJOURNED)

25 (PROCEEDINGS RESUMED PURSUANT TO ADJOURNMENT)

26

1 MR. CHAIRMAN: Mr. Crum?

2 MR. CRUM: Dr. Hill, I will
3 be speaking this evening on behalf of the Yukon Conservation
4 Society. I would like to first ask you; I understand from
5 a secondhand source that you have commented upon whether
6 or not your report will be made public and I apologize
7 for not having heard what you said. I wonder if you could
8 clarify that for me.

9 MR. CHAIRMAN: Yes. Apparently
10 the Minister has written me a letter. I haven't received
11 it yet, but he's asked me to arrange for the public
12 distribution of the report shortly after he receives it.

13 MR. CRUM: I see, and shortly
14 after?

15 MR. CHAIRMAN: Shortly after
16 he receives it. You know, there's mechanics involved in
17 distributing. So, I assume that's what he meant.

18 MR. CRUM: So it won't be
19 simultaneously submitted to the public and to the
20 Minister, is that correct?

21 MR. CHAIRMAN: No it won't
22 be simultaneous. It'll be a couple of days later.

23 MR. CRUM: Thank you. Mr.
24 Chairman, as I'm sure you're aware, the Yukon Conservation
25 Society has been and still is opposed to completion of
26 the Dempster Highway. However, it appears that despite our

1 efforts, as well as those of many others, the Federal
2 Government is determined to press on to completion. On
3 the 10th of July, which was this past Sunday, Commissioner
4 Pearson submitted in evidence at the Lysyk Inquiry a
5 document entitled "Paper on Dempster Highway and Proposals
6 for Management of Highway Corridor". This document has
7 caused some concern and I feel, Dr. Hill, that it is of
8 interest and importance to your work.

9 Because of that, I've taken
10 the liberty of providing your panel with copies of that
11 document. Dr. Hill, the Dempster Highway and its
12 management must be considered as part of the environment
13 through which a potential Dempster lateral would pass.
14 I feel that it is necessary for this panel to address the
15 proposed management plan of the Dempster Highway in its
16 deliberations on a Dempster lateral.

17 If this panel is going to
18 paint a realistic and environmental picture of the northern
19 Yukon, it cannot ignore the highway or its management,
20 and its potential impact on this environment. It is upon
21 this environment, I suggest, that a gas pipeline will have
22 an impact.

23 This becomes even more
24 important and critical, given the fact that no comprehensive
25 assessment has ever been prepared to address the impacts,
26 that the Dempster Highway will have on the environment;

1 nor has there been any monitoring of construction activity.

2 Dr. Hill, for you and your
3 panel to ignore the ways in which the Dempster Highway
4 will be used, will be to ignore a very important aspect
5 of the environment of the northern Yukon. If I could
6 just give you an example, Dr. Hill, you asked the previous
7 witness, Chief Kay, whether the pipeline could be built
8 in non-migratory periods of the Porcupine caribou herd,
9 given that the highway is there.

10 I suggest to you, Dr. Hill,
11 that the single most influential factor in that scenario
12 will be the management and use of the highway. This
13 concern of the society is heightened by the apparent
14 homocentric nature of this recent management proposal,
15 and I would like to read a few excerpts from this
16 document to give you an idea of what I mean. At page
17 8 of this document:

18 "One basic fact should be established, and
19 that is that regardless of how hauntingly
20 beautiful the wilderness area may be, it
21 serves little purpose in the overall scheme
22 of things unless it is enjoyed by people".

23 At page 18:

24 "The aim is to develop a system that is
25 readily acceptable to those who administer
26 it as well as to the road users. It must:

1 be as simple as possible, minimizing in-
2 convenience and optimizing freedom for motorists.
3 It must ensure that motorists understand the
4 need for restrictions".

5 At page 20:

6 "On the basis of the available information,
7 it is not desirable to close the road to
8 traffic on a long term basis, and closure
9 for short terms should only be under extreme
10 conditions when there is no alternative".

11 I might add that preceding
12 that long term basis, it appears to be defined as, for
13 example, the migratory period to and from the calving
14 grounds and also the period of time when the caribou are
15 on their winter range. Those are considered long term
16 periods and they're also considered long enough to
17 be unacceptable for permanent closure.

18 In light of this, Dr. Hill,
19 I would suggest to you that this document has a significant
20 impact on your deliberations and that you may find it
21 difficult to realistically assess the implications of a
22 Dempster lateral without having a representative of the
23 Territorial Government come before you and explain this
24 document in greater detail.

25 Thank you very much. I would
26 hope that those quotations I read from the paper would

1 elicit some response from the people here. Possibly Dr.
2 Carson Templeton would care to comment?

3 MR. CHAIRMAN: Before he does,
4 maybe the panel has some questions.

5 MR. CRUM: Sorry, excuse me.

6 MR. CHAIRMAN: How long are
7 these periods you're speaking of when the caribou are
8 on that winter range and the period of migration to and
9 from?

10 MR. CRUM: You're probably
11 asking the wrong person. I certainly have never been in the
12 area and have not studied the herd, but it's my understanding
13 that the caribou herd is on the winter range for possibly
14 six months and the migratory period, I believe, is something
15 in the order of one to two or three months, but I
16 certainly stand to be corrected on that.

17 MR. CHAIRMAN: Did I read
18 you correctly in that you feel that the management of the
19 road would have a far greater impact than the construction
20 of the pipeline? Let me put it another way. How the
21 road is managed could have a far greater impact than the
22 construction of a pipeline.

23 MR. CRUM: I would suggest
24 that a question like that could possibly be best answered
25 by a representative of the Wildlife Branch, Bill Klassen,
26 and Manfred Hoefs, but I would like to point out; it is

1 our opinion that there really is not enough known at this
2 present time. There has never been a comprehensive
3 assessment made of what the impact of the Dempster Highway
4 will have, and that other than the work the Wildlife
5 Branch has done, that most of the work on the Porcupine
6 caribou herd has been associated with the Arctic Gas
7 proposal on the North Slope, and incidentally with its
8 movements and so on in the lower part of the Yukon.

9 So, it's probably very difficult
10 to say. However, I think one thing is clear; that if
11 fairly unrestricted access is given to the Dempster
12 Highway, that if one looks at other herds in the North
13 and their status, that whenever time came to consider the
14 impacts of a pipeline on that herd, that one might be
15 dealing with something such as a Fortymile Sties
16 herd or some other remnant herd.

17 MR. CHAIRMAN: Also, a
18 point of clarification. Are you suggesting that an
19 enviromental impact statement should discover the impacts
20 on the two projects together rather than individually;
21 the management of the road plus the construction^{and}/operation
22 of a pipeline?

23 MR. CRUM: I'm not sure
24 I totally understand your question, but the Conservation
25 Society is suggesting that that road and its management
26 must be looked upon as part of that environment of the

1 northern Yukon that you have been asked to look at with
2 respect to the impacts of a potential pipeline and that
3 the environment which you assess, with respect to that
4 pipeline, is going to be greatly influenced by the use
5 of that road, and whatever management techniques are
6 applied to that road are going to directly affect that
7 environment which will directly affect your assessment
8 of it.

9 MR. CHAIRMAN: Yes, you seem
10 to be saying that in order to develop the management
11 strategy for the road, an environmental impact study
12 has to be done to such an extent that-to describe that
13 environment to such an extent that the same data could
14 be used for any environmental impact statement written
15 for the construction of a pipeline.

16 MR. CRUM: I think that's
17 very true, that the information will also have great
18 applicability to any pipeline construction. For example,
19 it would certainly I'm sure give you the data base that
20 really I would suggest doesn't exist at this time; the
21 baseline data by which one could measure assessments.

22 I might also suggest that
23 one should also consider the possibility of synergistic
24 effects with a highway and with a pipeline, the concept
25 which Dr. Banfield has addressed. I think this has been
26 mentioned before with respect to the Alaska Highway and

1 also the pipeline along the Alcan route, but this is also
2 something that should be considered with the Dempster
3 Highway and any potential Dempster lateral.

4 MR. CHAIRMAN: Do any other
5 panel members have questions? Mr. Njootle, or Chief Kay,
6 do you have any questions to ask Mr. Crum?

7 MR. NJOOTLI: I don't have
8 any questions but just as a matter of clarification I think
9 that due to the lack of assessment on that particular
10 Dempster route there, I think if my memory serves me correctly
11 at the Lysyk Inquiry at Old Crow, I asked Mr. Burrell how
12 much time is needed to do a complete data study on the
13 Dempster lateral, and he told me that he didn't know the
14 answer.

15 So, I immediately asked the same
16 question to a representative from Canadian Arctic Gas
17 and he informed me that it should take about seven to
18 ten years to get a complete assessment of the whole thing.
19 I don't have any questions because there's no questions
20 to be asked.

21 MR. CHAIRMAN: Mr. Romaine?
22 Mr. Parkinson? Mr. Klassen?

23 MR. KLASSEN: I don't have
24 any questions of Mr. Crum. However, he referred to us
25 one of the questions that you asked and Dr. Hoefs would
26 like to comment on the length of time that the caribou are

Mr. Klassen
Dr. Hoefs
Mr. Bouckhout
Mr. Crum

• 2065

1 on the winter range.

2 DR. HOEFS: We know when they
3 do show up on the Dempster because we have a hunting
4 season and the hunting season is every fall,
5 and usually they come in the last week, in October. That
6 was when the Dempster did not extend beyond mile 183. Last
7 year it went to Eagle and they showed up a little
8 bit earlier and this year they were seen from construction
9 activity at the Eagle still in mid-May. So, that is roughly
10 the time span they are in the vicinity of the Dempster.

11 MR. CHAIRMAN: Thank you
12 very much. That was at the Eagle River Bridge they were
13 seen this year in May.

14 DR. HOEFS: Yes.

15 MR. CHAIRMAN: Mr. Templeton?
16 Mr. Hernandez? Mr. Bouckhout, do you have any comment?

17 MR. BOUCKHOUT: No, sir.

18 MR. CHAIRMAN: Panel staff,
19 do you have any questions or comments? Any questions
20 or comments from the floor? Fine. Would you like to
21 say anything in summation, Mr. Crum?

22 MR. CRUM: Just to reiterate,
23 Dr. Hill, our concern that you do address any management
24 proposal that's put forward by the Territorial Government
25 with respect to the Dempster Highway, and I certainly hope
26 that you share the society's concern that such a management

1 proposal does form an integral part of the environment of
2 the northern Yukon, and must be considered when considering
3 the implications of a Dempster lateral in the northern
4 Yukon.

5 MR. CHAIRMAN: Mr. Templeton
6 is going to be unavailable to us tomorrow, and I would
7 like to ask him to present his comments now.

8 MR. TEMPLETON: Mr. Chairman,
9 I think the basic question that you're being asked is
10 whether you find an Alaska Highway corridor across the
11 southern Yukon acceptable for a gas pipeline. I use
12 the word "corridor" rather than "route" because the 1972
13 Pipeline Guidelines, Expanded Pipeline Guidelines, required
14 the consideration that the first pipeline would define
15 a transportation corridor for a possible future oil
16 pipeline, electric power lines and a highway.

17 Of course, the Alaska and
18 other highways already exist within the area. I think
19 that we have to discuss the matter of routes and corridors
20 before we get to the Dempster because it's the principle
21 that should be discussed first.

22 An oil pipeline is still a
23 possibility for transporting oil from Prudhoe Bay or Naval
24 Petroleum Reserve No. 4 in Alaska to the mid-western
25 states. So, although you've not been asked to comment
26 on an oil pipeline, it would be prudent to have in mind

1 that approval of a gas pipeline may set a precedent for an
2 oil line. The evidence of the Northern Canada Power
3 Commission also indicates that a power line is being
4 contemplated.

5 Therefore, I suggest that
6 you're being asked to comment on the suitability of a
7 corridor, not a route. A route indicates to me a specific
8 alignment. Although the applicant has shown an alignment
9 on maps already within the short time these hearings have
10 been in operation, there have been a number of other routes.
11 Of course, the National Energy Board has come up with
12 the reroute and we're already talking about the Ibex
13 River and the Mount Michie-Squanga Lake areas. Of course,
14 all your discussions today were on other routes.

15 But the Dawson-Klondike Loop
16 diversion has not been studied and no one as far as I can
17 see, can say whether the route is acceptable or even better
18 than the present route, although I realize you're struggling
19 with this and I compliment you and the people on how far
20 they've got. If it's acceptable, a further alternative
21 has already been suggested that it continue directly to
22 Watson Lake, instead of coming to Whitehorse. The Dawson
23 diversion is not the chosen route, and if an oil line has
24 to be considered, then one can't help but wonder if there
25 is not a possible route north of Kluane Lake.

26 All this adds up to our

1 suggestion that Canada needs your recommendation on the
2 suitability of the southern Yukon as a transportation
3 corridor. Then, to the extent that you can, you could
4 comment on the routes within that corridor. I do not think
5 you can be expected to compare those routes with the time
6 you have available. A detailed analysis, issue by issue,
7 is needed to do that.

8 It is our opinion that an
9 acceptable route can be found for a gas pipeline within
10 this corridor, but as I stated yesterday, only if the
11 government is ready to control it.

12 Now, to get to the Dempster
13 Highway lateral; the preceding discussion applies even
14 more strongly for the Dempster Highway lateral. We
15 reject completely the belief that the selection of the
16 Dawson diversion automatically implies approval of the
17 Dempster lateral for transportation of Delta gas.

18 Just as you must consider
19 whether the southern Yukon is an acceptable transportation
20 corridor, Canada must also consider whether the Dempster
21 Highway is an acceptable corridor, not only for gas but
22 also for an oil pipeline. Should enough oil be found in
23 the future to make an oil pipeline feasible, the route
24 chosen previously for a gas pipeline for Delta gas will
25 have set the precedent and determined the corridor for
26 an oil line.

1 We urge you, in your report,
2 to reject the acceptance at this time of the Dempster
3 corridor until such time as the impacts of the highway
4 itself have been studied, as well as possible gas and
5 oil line . We do not consider the rejection of the
6 Dempster corridor at this time should be considered as
7 a rejection of the Alaska Highway corridor. The reason
8 for that is the Mackenzie Valley corridor is an alternative
9 to the Dempster corridor ten years from now.

10 We urge you to recommend that
11 the impact assessment studies and public hearings on
12 the Dempster corridor be instituted immediately, and I
13 certainly would, when we're talking about a corridor,
14 would insist in that, that it include the highway as
15 well as any gas pipeline. I don't see how you can write
16 an impact assessment of a pipeline without a highway when
17 it's alongside the highway.

18 In the timing schedule that
19 we presented to you last night, there is indicated our
20 opinion of the time needed for these studies. Thank you.

21 MR. CHAIRMAN: Thank you,
22 Mr. Templeton. I would like to ask you a question on the
23 legitimacy of assuming that an oil pipeline should be
24 considered as part of a corridor when it would appear
25 that the development of a gas pipeline is possible. It's
26 not been shown that it's possible, but the proposal is that

1 it's possible to build a gas pipeline, cool it, and place
2 it in the ground which would bring about quite a different
3 set of environmental impacts than an oil pipeline that
4 was heated in the ground, or in fact an oil pipeline heated
5 above the ground.

6 So, that in fact one may be
7 able to build a gas pipeline in conjunction with the
8 highway; whereas technically the oil pipeline may not
9 be feasible. Is it, in fact, placing too heavy constraint
10 on the development to insist that the oil pipeline, the
11 development of an oil pipeline, be automatically included
12 when one is considering a proposal to build a gas pipeline?

13 MR. TEMPLETON: Well, I think
14 the Pipeline Guidelines which are certainly going to
15 be used in the future as the rules or, it had Cabinet
16 approval, those pipeline guidelines. They represented
17 the Government of Canada's opinion when they were written
18 and they're still in effect as far as I know. It says
19 that you shall consider those and I realize your terms
20 of reference doesn't say that.

21 But I think reading the
22 Berger Report, you can't help but read how he understood
23 that and, of course, his terms of reference insisted that
24 he look at those Pipeline Guidelines. But they're still
25 in effect, and you see, if Petroleum Reserve No. 4 turned
26 out a lot of oil and the United States having serious

1 difficulties knowing how they're going to get the oil to
2 the mid-west, it could well be that an oil pipeline would
3 come down the same route, through Canada, and the logical
4 thing would then--say if they found oil in the Delta, would
5 be to bring it down that way, the same way as the gas.

6 Now, I realize that this is
7 looking a long way in the future, but we, in discussing
8 environmental impacts, we're really talking about whether
9 we're going to look only at the incremental effect of
10 each segment, and if you look at it small enough it's
11 insignificant, but when you put them all together, it
12 becomes very significant. It's what Cowen calls the
13 destruction of the environment by insignificant increments.

14 MR. CHAIRMAN: Yes, I'm aware.

15 MR. TEMPLETON: I think he's
16 used that before.

17 MR. CHAIRMAN: Yes. Of course,
18 a panel like this must look at the basics of any proposal
19 such as this that would place a different constraint
20 on the consideration of a gas pipeline proposal, and
21 of course, it would be within our auspices to make a
22 recommendation like this concerning environmental impact,
23 but when the techniques are so different, I would like
24 advice on whether or not it is logical to include both
25 in a corridor concept when the impacts resulting are
26 likely to be quite different; an above ground pipeline versus

1 a below ground cool pipeline or, in fact, heated below ground
2 pipeline versus a cold below ground pipeline.

3 I'm wondering whether or not
4 it's really possible to consider adequately all the
5 eventualities, or whether it's more logical to in fact
6 consider the gas pipeline along with the highway and,
7 in fact, look at the oil pipeline if and when it should
8 ever become a possibility.

9 MR. TEMPLETON: Well, I think
10 the oil pipeline has to be looked at at the time that it
11 comes along, all right, but just as now we're looking at
12 the Alaska Highway route and we're adding the incremental
13 impact of a gas pipeline and saying well, the highway is
14 there. So, we're really not adding that much more. Can't
15 you see us going another step and say well, look, we've
16 got a highway and a gas line, we better put an oil line
17 on and I would think that the logical place, if there
18 was going to be an oil line would be along much the same
19 route.

20 MR. CHAIRMAN: Okay, maybe
21 I could shift gears and ask you another question, concerning
22 the actual terms of reference for an environmental impact
23 statement that you suggest to be carried out on the
24 highway, and whether or not that should include the proposed
25 pipeline or whether it should be done independently or
26 what are your thoughts?

1 MR. TEMPLETON: Well, of course,
2 I suppose I'm liable to get emotional again, but I feel
3 that the Government of Canada and the Department of Public
4 Works has a responsibility to make one. I think they still
5 have and I think they have to be told. Otherwise, I don't
6 know how we're ever going to get them to accept their
7 responsibilities.

8 However, I guess now we should
9 be working the two of them together, but I don't think that
10 gets around the Department of Public Works' responsibilities
11 to being a good corporate citizen the same as a pipeline
12 company.

13 MR. CHAIRMAN: Do any panel
14 members have questions? It must be getting late. They're
15 very quiet tonight. Mr. Njootli, or Chief Kay? Mr. Crum,
16 do you have any comments on Mr. Templeton's brief?

17 MR. CRUM: I have one question.
18 Dr. Templeton, your presentation seems to be at variance
19 with the recommendation of the National Energy Board with
20 respect to the feasibility of a Dempster lateral and the
21 ability to overcome environmental obstacles and put a
22 pipeline in that area. If I read you correctly, you're
23 effectively calling for a moratorium until such time as
24 one can adequately assess the impact that a pipeline would
25 have or, as you say, study a corridor through which
26 pipelines could be put. Would you comment upon this variance

1 of opinion between you and the National Energy Board?

2 MR. TEMPLETON: Well, I think
3 the National Energy Board has a different role than I do.
4 They have, I think, a semi-political role inasmuch as they're
5 conducting--they're selling or approving gas and oil and
6 energy across the International Boundary. I assume that
7 they're trying to work out a reasonably good political
8 solution to the best of their ability.

9 That isn't my way of looking
10 at it. My way of looking at it is you can't build anything
11 unless you tell what your impacts are going to be and
12 what are the costs and the benefits. But I don't think
13 we're calling for a moratorium on the route. We are for the
14 Dempster, but not for the other route. But in the time
15 schedule that we presented last night, we felt that that
16 could be studied enough in that time schedule so that
17 you could pick the route within the general southern
18 Yukon corridor.

19 I realize it isn't quite as
20 soon to get on stream that Foothills would like and they're
21 no doubt going to have words with me, tomorrow, but the
22 big difference we have in opinion is time to do those
23 studies.

24 MR. CRUM: No, Dr. Templeton,
25 when I said moratorium, I was only referring to the
26 Dempster lateral and not the main route. Just one other

1 further question. Your comment upon the sort of quasi-
2 political role that the N.E.B. finds itself in, does that
3 apply equally also to their ability to reject an Arctic
4 Gas interior route and yet accept a Dempster lateral?

5 MR. TEMPLETON: I don't think
6 I can answer that. They don't take me into their
7 confidence.

8 MR. CRUM: Let me just rephrase
9 that then. Are you comfortable with the ability to make
10 that decision?

11 MR. TEMPLETON: That they
12 have the ability to make the decision as to whether to go
13 the Arctic Gas route or the Alaska Highway route?

14 MR. CRUM: No, what I'm saying
15 is are you, in your own mind, satisfied that one could
16 reject an interior route through the northern Yukon for
17 environmental reasons and yet at this point in time
18 accept the possibility of a Dempster lateral?

19 MR. TEMPLETON: I suppose--
20 I don't know whether they rejected it entirely on
21 environmental reasons. I think they mention the social
22 as being one of the major reasons for the interior route.
23 I would think the social problems of the interior route
24 would be considerably more than the Dempster, I guess.

25 I don't know, I certainly
26 wouldn't have agreed to the Dempster anyway. So, I suppose

1 I'm negative in that respect.

2 MR. CHAIRMAN: Mr. Romaine?

3 MR. ROMAINE: Yes, Mr. Chairman,
4 we have a number of general questions, I believe, at this
5 stage, but one I would like to get some clarification from
6 the Chair, if I could please. It seems that when you start
7 to get into the discussion of the Dempster lateral versus
8 say the alternates through the Yukon to carry Alaska gas,
9 part of the criteria for the selection of the route
10 obviously is for the intended purpose of the pipeline.

11 We've gone through some
12 discussion this afternoon related to the three or four
13 alternates to carry Alaska gas. I'm referring to Mr.
14 Templeton's brief. If, on the other hand, the pipeline
15 is to accommodate the transport of Canadian gas via the
16 Dempster lateral, I guess really where I'm having some
17 trouble is the question as to what that does to the
18 corridor alternatives. Will they then be restricted
19 to alternatives that perhaps lie to the east perhaps
20 as far south as Whitehorse?

21 I guess I'm really asking
22 for clarification as to the process that you intend to
23 follow/ⁱⁿthe Inquiry. I realize you outlined it once before,
24 but I'm a bit confused yet sort of how we discuss these
25 two, which it seems to be a bit overriding constraints.
26 One being for the Alaska gas; the other being for Canadian

1 gas.

2
3 MR. CHAIRMAN: Well, I'm the
4 first one to admit that it is a bit confusing. When our
5 terms of reference were set, ~~when we were asked to look at~~ the
6 Foothills (Yukon) Ltd. proposal, we were looking at a
7 proposal to transport Alaska gas south through the Yukon.
8 There are obviously alternatives which we've heard today
9 to the route as proposed by Foothills for that function
10 of transporting Alaska gas south.

11 We will make comment on those
12 routes as much as we can with the limited data and so on
13 that is available. That is as far as transporting Alaska
14 gas south. The other consideration--the other proposal,
15 it's not a formal proposal yet, but the other proposal is
16 to transport Mackenzie gas south via the Dempster to link
17 up with the main gas line coming from Alaska.

18 It is my understanding that
19 the two decisions on the two functions don't have to be
20 made at the same time; that the decision to transport
21 Alaska gas south can be made, either ignoring the Dempster
22 lateral, or taking into consideration that in fact someday
23 it might exist, and allowing decision on the Dempster
24 lateral to take place at a later date.

25 So, consequently, we are
26 looking at the proposal to bring Alaska gas south through
southern Canada and we've been asked to make comment on a

1 possible Dempster lateral and really our terms of reference
2 are as broad as that, what comments we can make. We don't
3 know yet.

4 Mr. Surrendi?

5 MR. SURRENDI: My questions
6 are reasonably general and I hope they have some bearing
7 on the results regarding the Dempster lateral. I'm going
8 to ask them of both Mr. Templeton and the Foothills group,
9 and I think I'd like a response from both of them.

10 In view of the National
11 Energy Board decision to have the Mackenzie Delta gas
12 considered to be transported down the Dempster--anyways,
13 the idea is that it's going to attach to your Alaskan
14 gas line. Is that correct? It will be linked up and
15 transported in a forty-eight inch pipeline from there
16 to the parts in the south?

17 MR. BOUCKHOUT: I suspect,
18 Mr. Surrendi, that was in the minds of the panel of the
19 National Energy Board.

20 MR. SURRENDI: Yes, okay.
21 My question is, when the line is in full operation, and
22 I assume that that will be sometime, seven or eight years
23 hence, after construction, and the Alaskan gas--the fields
24 are in operation completely, will there be room in that
25 line for Canadian gas, and if so, what kinds of pressures
26 are you going to have to boost your line pressure to to hold

1 this gas?

2 MR. BOUCKHOUT: Okay, the
3 build-up in our system--the initial operation is planned
4 for throughput in the order of 1.6 MMcf per day. Standard
5 capacity for the system proposed is 2.4 MMcf per day.
6 Our advisors estimate the deliverability from the Prudhoe
7 Bay field will be in the order of 2 MMcf per day. The
8 forty-eight inch system, as designed, is capable with
9 additional compression, of carrying in the order of 3.2
10 to 3.4 MMcf per day.

11 Now, that does not indicate
12 that you increase the maximum operating pressure of the
13 system. All you do is insert additional intermediary
14 compression so that the pressure drop from the outlet
15 of one station to the inlet of the next is not as low.

16 MR. SURRENDI: So, your
17 pressures will remain somewhere around twelve hundred
18 pounds per square inch?

19 MR. BOUCKHOUT: The exit
20 pressure from the station is in the order of 1,260 pounds
21 per square inch on our current design system with compressor
22 stations spaced at approximately seventy mile intervals.
23 The inlet at the next station will have a pressure in the
24 order of a thousand to eleven hundred pounds.

25 MR. SURRENDI: Do you foresee
26 the need to loop the line between say Dawson and the Yukon

1 boundary and perhaps points south?

2 MR. BOUCKHOUT: That's pretty
3 much a hypothetical question. That would be entirely
4 dependent on deliverability from the--this is assuming
5 intermingled gas would depend upon the deliverability from
6 the fields. There's no way I could answer that particular
7 question. Given the capacity and the projected production
8 from the fields, it appears that that would not be of
9 necessity.

10 MR. SURRENDI: You're talking
11 about the Canadian fields now?

12 MR. BOUCKHOUT: I'm talking
13 right now about what is known about the production capacity
14 of the Prudhoe Bay field. Of course, there's nothing to
15 my knowledge known about--well, I shouldn't get into that.
16 I really couldn't comment on that. I don't have enough
17 information to be able to comment on what might be potential
18 from the Delta fields.

19 MR. SURRENDI: I see. The
20 angle of my questioning, of course, is to determine whether
21 or not there would have to be a loop and if so, that would
22 mean virtually the construction of another eight hundred odd
23 miles of pipeline, plus the Delta stuff. Is that not
24 correct?

25 MR. BOUCKHOUT: No, that's
26 not necessarily correct. A looping program does not

1 necessarily entail an entire second line. When you reach
2 capacity in the system and you want to increase the
3 capacity, what you do is build "C" lines attached to the
4 main one. You do not run an entire new line.

5 Your fully looped system then
6 would ultimately be, if you ever reach those capacities,
7 two complete lines, but it's not necessary to build two
8 complete lines in your looping process.

9 MR. SURRENDI: I'm afraid
10 my technical skill and knowledge at that sort of thing
11 is virtually limited to what I've just spoken on. Anyhow,
12 my point was that if there's a necessity to do that, we
13 would be virtually building fifteen hundred miles of
14 pipe to get Canadian gas out of the Mackenzie Delta and
15 environmentally, at least, I would think that that would have
16 its disadvantages. Economically I suppose as well, but
17 that's out of my bag as well. Thank you.
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1 MR. BOUKHOUT: Just a comment
2 on your last point. If it were ultimately decided to
3 comingle the gas on the same line, as I've indicated, in
4 the design there is excess capacity and therefore it
5 would not necessarily entail any looping at all. If
6 ultimately it entailed any looping, it would not necessarily
7 entail twinning the system.

8 MR. CHAIRMAN: Mr. Parkinson?
9 Or, I'm sorry, Mr. Templeton, would you like to comment
10 on that last exchange? Mr. Parkinson?

11 MR. PARKINSON: Mr. Chairman,
12 I'd like to just comment. I don't have a question. In
13 general, I agree with Mr. Templeton's approach, that we
14 should in fact at this stage be considering corridors.
15 That, in my opinion, it's premature to be considering
16 routes and I mentioned this afternoon, I feel that a route
17 is laid down within a corridor and it's a pretty definite
18 finite thing.

19 To lay out routes at this
20 stage I think would be operating from the position of
21 abysmal ignorance and we, in the course of our work,
22 have uncovered the fact that there's quite insufficient
23 data to lay out routes at this time. Thank you.

24 MR. CHAIRMAN: Thank you.
25 Any comment? Mr. Templeton, you seem to have some
26 support there.

1 MR. TEMPLETON: I'll be quiet
2 when I get that support.

3 DR. HUGHES: Just a point
4 of clarification. When you say that we should be looking
5 at corridors rather than routes, are you still talking--
6 about corridors in the Templeton definition, that the
7 corridor must be considered in total potential gas pipelines,
8 oil pipelines, highways, transmission lines?

9 MR. PARKINSON: Yes, I do
10 agree with that. We only need to look at examples of
11 step development. The incremental impacts in themselves
12 are not significant, but they're additive over a period
13 of time. If we look at the California hydro development
14 as an example, the salmon runs, which at one time were
15 very good, have been virtually eliminated and the same
16 process is well advanced in the Columbia River system,
17 regardless of the mitigation measures that have been
18 undertaken.

19 So, I think we've got plenty
20 of examples behind us to justify doing some pretty thorough
21 investigation of what we're stepping into.

22 MR. CHAIRMAN: Mr. Romaine,
23 do you have a brief to present? I'm sorry, before I ask
24 you, panel staff do you have any comments or questions
25 for Mr. Templeton? No? Any comments from the floor?
26 Okay. Mr. Dennis Surrendi?

1 MR. SURRENDI: I'd just like
2 to address this question to the Chair, if I may. Based
3 on some of the recent discussions that I've heard, could
4 anyone, particularly you, Mr. Chairman, answer this
5 question. Are the 1972 Pipeline Guidelines issued by the
6 Government of Canada still viable? Are they currently
7 acknowledged by Cabinet in the Federal Government as
8 being the guidelines upon which pipeline developments
9 in the Arctic are, in effect, to take place under?

10 MR. CHAIRMAN: Well, our
11 terms of reference do not include the supposition that
12 the 1972 guidelines should guide us. Whether or not
13 they're still in operation for consideration of a
14 Dempster lateral, I don't know. No terms of reference
15 have been set for such a consideration.

16 MR. SURRENDI: Thank you.

17 MR. CHAIRMAN: Mr. Romaine?

18 MR. ROMAINE: Thank you,
19 Mr. Chairman. I have a few introductory remarks. First
20 of all, in view of the fact that only a preliminary
21 identification of a route has been identified for the
22 Dempster and in recognition of the geographic area to
23 be covered, it has not been possible at this time to
24 cover in an adequate sense the environmental concerns
25 and resource values which may be associated with the
26 proposed lateral.

Three areas of notable permanent frost concern are the North Fork Pass, the Eagle Plain and the north slope of the Richardson Mountains. Very little is known about the fish resources of the area, traversed by the Dempster Highway, especially in terms of

1 spawning, rearing and overwintering areas. Limited informatio
2 on the specific locations for the Yukon of stream crossings
3 is available and thus precludes anything more than a
4 general statement of concern, for example, or related to
5 habitat destruction, interruption of fish passage,
6 channelization and siltation at or downstream of crossing
7 sites.

8 With respect to the subject
9 of fisheries, again if you wish further clarification or
10 more information on the subject, Mr. McNally is here.
11 In addition, we have Mr. Jeff Stein who has some information
12 that he could give in part on the Northwest Territories'
13 section of the Dempster.

14 The tundra, going on with
15 our reading, the tundra is extremely sensitive to change.
16 Disturbance to the drainage patterns could result in
17 vegetation modification and removal of plant cover in
18 permafrost areas could lead to extensive changes and
19 ultimately to revegetation problems, particularly as the
20 alpine tundra association is very slow to revegetate.

21 In certain areas of the
22 Dempster route, the location and operation of borrow
23 pits is a major concern. A potable water supply for
24 large construction camps will be a problem, particularly
25 in the Eagle Plain area. Effluent disposal may also
26 be a problem in this area. Concerns relative to construction

1 camps; toxic materials, storage, waste disposal, management,
2 et cetera, are site specific and require detailed plans for
3 a proper evaluation.

4 There's a lack of meteorological
5 data along the route, and thus it would be difficult to
6 assess the effects of the compressor station emissions
7 even if locations were known. General concerns are the
8 formation of ice fog in winter, particularly as it affects
9 highway traffic and airfields located close to compressor
10 stations and the effects of sounds emitted by the compressors
11 on wildlife population.

12 With respect to wildlife,
13 what we'll be presenting right now will be the information
14 on migratory birds. As I understand it, the panel has
15 requested Mr. Dennis Surrendi and obviously, he's just
16 spoken so he's here, and so at this stage we'll deal
17 only with migratory birds, although I believe you've
18 made a request to deal with mammals.

19 Information on migratory
20 birds is almost completely lacking along this route. From
21 preliminary observation, it appears that waterfowl use of
22 the Klondike Valley east of Dawson, numerous lakes of
23 the Blackstone River, Champlain Lake complex, the Eagle
24 Valley wetlands and potholes along the route. In the
25 Northwest Territories, sorry; in the route in the
26 Northwest Territories.

With respect to thermal disturbance, we require further studies as to what this means to the active layer and drainage diversions along the Dempster route, particularly the North Fork Pass, the Eagle Plain and the north slope of the Richardson Mountains. There is obviously a number of other requirements

1 for more information related to riverbank and channel
2 bed stability.

3 In summary then, Mr. Chairman,
4 basically we also would like to identify again that there
5 is an absence of an adequate data base to register our
6 environmental concerns. As I said before, we have
7 experts here from the various disciplines that are
8 available for follow-up on this, if you wish.

9 MR. CHAIRMAN: Thank you,
10 Mr. Romaine. Have you any concept of the length of
11 time that would be required in order to collect information
12 required for an adequate environmental impact statement?

13 MR. ROMAINE: I think it will
14 vary upon the requirements by each service. So, I would
15 like to have the various services address that point
16 specifically. I think as a general statement though,
17 the point that we did make in our discussions on the
18 Alcan route, that there's still a requirement for one
19 year just to get a feel for one year's seasonal
20 variations and that's the very minimum.

21 But I would like to ask
22 the various services to address that question for you.

23 MR. CHAIRMAN: Thank you.
24 Mr. Romaine, you'd like to confer on that and come back
25 tomorrow afternoon on the answer to that?

26 MR. ROMAINE: I appreciate

1 that, thank you.

2 MR. CHAIRMAN: Are there
3 any questions from panel members? Dr. Hughes?

4 DR. HUGHES: I don't know
5 whether this is an appropriate question at this time,
6 but I was wondering if Mr. Wahl could tell us what plans
7 the Atmospheric Environment Service has for extension
8 of its observations in the Dempster Highway area, when
9 those might become active and then what kind of record,
10 in terms of number of years, would be required in order
11 to answer some of the types of questions that you've
12 been asked with regard to the other routes?

13 MR. WAHL: That's quite a
14 question you've asked. With regards to the Dempster
15 at the present time, we have approximately seven years
16 data at mile forty-one at the territorial garage and
17 we have about four years data at the Ogilvie River camp
18 which is mile 123. We have one year's data via the
19 D.N.D. when they were building a bridge at Eagle River,
20 and also two previous summers when D.P.W. were in there
21 doing a site selection study.

22 We have no appreciation
23 whatsoever of the Richardson Mountain area and once
24 you get into the other side, there is adequate data
25 at Inuvik, Norman Wells, Fort MacPherson. We have
26 made arrangements with the Territorial Government that

1 at the time that the Territorial complex is developed
2 at Eagle River, that we will begin a steady program of
3 observation; the D.N.D. having pulled out now, having completed
4 the bridge, the program there has now been curtailed.

5 We have approximately seven
6 years of intermittent data from Old Crow which allows
7 some appreciation, but it's at least a hundred, hundred
8 and fifty miles from the Dempster and possibly may not
9 be indicative. We hope to obtain some funding in
10 relationship to the pipeline study to do some profile
11 studies with regards to the inversion during the
12 mid-winter. These are ^{our} concerns with regards to compressor
13 sites, and would hope they'll do these within the
14 next year to get a proper evaluation of the Richardson
15 Mountains, although I think that we'd have to have a
16 station in there at least three or four years to really
17 be able to come up with any kind of data.

18 I would also class that the
19 height of land between--okay, this is right in the
20 Ogilvie as well, in the vicinity of Chapman Lake. I
21 think a couple of years data in there would be of
22 assistance. With the data base at--well, we call
23 Klondike is the mile forty-one and Ogilvie, with the
24 data base we have there, another two years of data in
25 the Chapman Lake area would allow us some appreciation
26 of what's going on right in the middle of the Ogilvies.

1 We can make some evaluations
2 right now where winter and this is the time of continuous
3 snow and probably below freezing temperatures, that for
4 the southern Yukon and by the southern Yukon I'm talking
5 pretty well Beaver Creek through to Watson Lake, that
6 winter normally is here by November the 1st and effectively
7 over by April the 1st. We do have the transition periods
8 in between.

9 Whereas once you get north
10 of the Ogilvies--the Ogilvies themselves are quite a
11 barrier for the intrusion of warm air into the North, and
12 that winter for them effectively is October the 15th through
13 to May the 1st. So, you have quite a bit longer period.
14 Snowfall is considerably lighter. Again, yesterday when
15 we were talking about what are the constraints with
16 regards to the movement of--or for wintertime construction,
17 snowfall can be a problem, but generally by December the
18 1st there should be--okay, these are just some opinions
19 I have. By December the 1st they would have enough snow,
20 certainly they'd have the frost degree days by that
21 time, so there would be ample frost within the ground.

22 With regards to--did you
23 ask me to respond to the alternate routes as well?

24 DR. HUGHES: No, I was asking
25 you how long--how many years observation you would need
26 in order to answer for the Dempster route the kinds of

1 questions that you've been answering for the Alaska Highway
2 and the Klondike Highway, so that your answer is right
3 too.

4 MR. WAHL: Is accurate. As I
5 say, our main concern would be--I'd appreciate with the
6 Richardsons, and I would think we'd have to have at least
7 five years data in there to make some--there are so many
8 variabilities year from year, although what you can do
9 is take data from a site and then correlate it against
10 the long term station. By that, you can make some
11 appreciation, but I think you should have at least three
12 years as a minimum to give some appreciation of what
13 goes on there and there it would only be an overview.

14 DR. HUGHES: A three year
15 minimum?

16 MR. WAHL: Three year minimum
17 and that's for the Dempster site. I think that for the
18 Ogilvie portion, at this time we have a fair data base.
19 Okay, a further three years would certainly help.

20 DR. HUGHES: I'm not a
21 statistician, but what kind of confidence limits does
22 three years give you?

23 MR. WAHL: Three years data,
24 if you can correlate this with any kind of reliability
25 against a station that has say fifteen to twenty years,
26 and then you use the three years data and use those

Mr. Romaine
Mr. Stein
Mr. Wahl
Dr. Hughes

• 2094

Mr. Lister

1 years and compare them as to what they are against the
2 long term average. You can come out with some appreciation.
3 Okay, this will not be finite data. As far as the
4 temperature regime, you would have fair confidence. The
5 participation regime, marginal confidence at best.

6 DR. HUGHES: Thank you very
7 much.

8 MR. CHAIRMAN: Any other
9 questions from the panel? Chief Kaye or Mr. Njootli,
10 do you have questions for the Department of Fisheries
11 and Environment? Mr. Klassen? Mr. Bouckhout?

12 MR. BOUCKHOUT: No, sir.

13 MR. CHAIRMAN: Panel staff?
14 Mr. Lister?

15 MR. LISTER: I have a
16 question for Mr. Romaine. You mentioned that Mr. Stein
17 was with us and he had done some studies on the Dempster
18 Highway effects on fish in the Northwest Territories.
19 Was that correct?

20 MR. ROMAINE: Yes, he's
21 available. I'll let him correct that. He may want
22 to make a statement on that.

23 MR. STEIN: We have some
24 data as far as the Dempster is concerned. We have
25 conducted an impact study on a small creek to about
26 halfway between Fort MacPherson and Arctic Red River,

1 Frog Creek by name. We have also conducted some brief
2 surveys roughly from Fort MacPherson on to the Yukon
3 border. The rest of it related to the highway we have
4 considerable other information on it to Inuvik.

5 MR. LISTER: So is it true
6 your studies have concentrated then in the flat area,
7 east of Fort MacPherson?

8 MR. CHAIRMAN: Would you
9 mind bringing the mike a little closer to you.

10 MR. LISTER: Yes. Have
11 your studies concentrated then east and north of
12 Fort MacPherson?

13 MR. STEIN: With the
14 exception of the brief survey which I made reference to
15 up as far as the Yukon border, the Yukon/N.W.T. border.
16 We did some preliminary fry surveys and whatnot at the
17 request of D. P. W.

18 MR. LISTER: Could you make
19 some generalizations with respect to the kinds of impacts
20 you've noted from the highway?

21 MR. STEIN: Did you want
22 to consider this right from the Delta, or--

23 MR. LISTER: No. Somewhere
24 closer to that portion of the Dempster that might be
25 applicable to the situation in the Yukon side of the
26 Dempster route.

Mr. Stein
Mr. Lister
Mr. McNally

•2096

1 MR. STEIN: I don't think I
2 can comment for the situation on the Yukon side. I would
3 say that probably for many of the tributaries between
4 the border and the Mackenzie, it doesn't appear that we
5 will have any great significant concerns, assuming that
6 suitable mitigation measures are included.

7 MR. LISTER: Okay. Thanks
8 very much.

9 MR. CHAIRMAN: Could I
10 follow this up on the Yukon side of the border. Were
11 similar studies requested by D.P.W. on the Yukon side?
12 Are you aware?

13 MR. STEIN: I'm not aware.
14 Maybe Mr. McNally can address that.

15 MR. MCNALLY: No.

16 MR. CHAIRMAN: The answer
17 is no.

18 MR. MCNALLY: The answer
19 is no.

20 MR. CHAIRMAN: This brings
21 up a general question. Are you aware of studies carried
22 out in conjunction with or on behalf of D.P.W. on either
23 side of the border? What other studies have been
24 carried out during planning and construction of the
25 highway? What's the data base from this endeavor?

26 MR. STEIN: Again, the data

1 base I would say is fairly good. To take in the rest of
2 it then from Arctic Red River to Inuvik, there have been
3 a number of studies done on tributaries such as the Ringling,
4 Campbell Creek, Caribou Creek. These are consultant
5 studies as well as some work on our own. There has been
6 nothing to my knowledge done north of Inuvik.

7 MR. CHAIRMAN: I would like
8 to address that I assume that's to do with the fishery
9 resource?

10 MR. STEIN: That's correct.

11 MR. CHAIRMAN: What about
12 the other environmental variables? Were there similar
13 studies done on migratory birds or ungulates?

14 MR. ROMAIN: I wonder,
15 Dennis Surrendi, do you know the answer to that question?

16 MR. D. SURRENDI: I didn't
17 hear the question, Mr. Chairman.

18 MR. CHAIRMAN: We were dis-
19 cussing environmental information that was collected
20 during the construction or planning of the Dempster
21 Highway, and Mr. Stein has been telling us of fishery
22 studies that were done in this regard.

23 I was asking the question
24 whether other environmental variables were also studied
25 at the time that the Dempster Highway was either planned
26 or constructed?

1
2 studies done by the Canadian Wildlife Service relative
3 to the Dempster Highway?

4 MR. CHAIRMAN: Well, any
5 environmental studies you're aware of. I'm asking a
6 general question in order to assure myself that we weren't
7 overlooking existing data.

8 MR. D. SURRENDI: To my
9 knowledge, Mr. Chairman, and that may be limited
10 incidentally--to the best of my recollection, the Canadian
11 Wildlife Service was approached for information on the
12 Porcupine caribou herd in the Yukon by consultants
13 that were apparently working for the Department of
14 Public Works. That's the total extent of what I know.

15 MR. CHAIRMAN: Okay, thank
16 you. We'll pursue it through D.P.W.

17 MR. ROMAINE: Perhaps, Mr.
18 Chairman, we could check that out for you and let you
19 know, if you so wish.

20 MR. CHAIRMAN: Yes, if you
21 would, thank you. Are there any more questions from
22 panel staff? Any questions, comments from the floor?
23 Mr. Bouckhout? Mr. Surrendi? Carl?

24 MR. C. SURRENDI: In conjunction-
25 I would like to bring this up in conjunction with our
26 last discussion, if I may, Dr. Hill, because I think this

1 hears some importance, although it relates only peripherally
2 to the actual Dempster line.

3 I'm going to ask this of
4 Mr. Bouckhout. There has been a great deal of discussion
5 regarding the concerns and selection of sites for compressor
6 stations in sensitive areas. If additional stations are
7 placed, as you say, to increase or maintain the compression
8 through your lines, likely these will be in between the
9 currently known or speculated compressor sites.

10 There appears to be much
11 less choice of areas for these sitings and hence, a
12 very real possibility that a compressor station constructed
13 seven or eight or ten years hence will be sited in a
14 sensitive area. Can you comment on this, or are you
15 people considering this in your current plans, Mr.
16 Bouckhout?

17 MR. BOUCKHOUT: I've been
18 deserted. I guess it's up to me. In terms of actual
19 siting having been considered in our current plans, no,
20 Mr. Surrendi, it has not. As I mentioned previously,
21 the system is designed with excess capacity as it is,
22 and capacity could be increased by the addition of
23 compression and as you mentioned, this could quite
24 likely be addition of compression between current
25 compressor stations or currently proposed compressor
26 stations.

1 It is not, as far as I know,
2 absolutely necessary that the compressor station or
3 additional compression be located precisely halfway between
4 what might be two existing stations. So, as there is with
5 the current stations, there would still be some flexibility
6 with any additional stations which might be added. But,
7 no, we have not considered intermediary sites.

8 MR. C. SURRENDI: Thank you.

9 MR. CHAIRMAN: Well, before
10 we go on to our next participant, I think I'll adjourn
11 the hearings for tonight and call them again for one
12 o'clock tomorrow morning and we'll continue on the
13 Dempster link issue. Tomorrow afternoon that would be,
14 Jack.

15
16 (PROCEEDINGS ADJOURNED UNTIL WEDNESDAY, JULY 13, 1977
17 AT 1:00 P.M.)
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